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Original Communications.

THE MANAGEMENT OF PULMONARY PHTHISIS.

By Karl von Ruck, M.D.*

WHILE the discovery of the bacillus of tuberculosis has contributed much to the etiology, diagnosis, and prophylaxis, the treatment of the disease has not been materially advanced thereby, inasmuch as all efforts directed against the life or activity of the germ itself have thus far utterly failed. Clinically, it is well established that a certain predisposition on the part of the particular organism plays an important part in the development of phthisis, and now, as before Koch's discovery, our chief resources in prophylaxis are the means employed to prevent or overcome the predisposing conditions, and in the established disease to repair the lesions with a view to cure.

To this end many methods and remedies have been proposed, and the success attending their employment has been in proportion to their influence upon nutrition in general, and that of the respiratory and circulatory organs in particular, as will be evident to any observer who will examine the list with this view, taking the term nutrition in its widest

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sense. Even the benefits from climate are best explained by its influence upon nutrition; and, on the whole, the medical profession is unanimous in its estimation of its great value in our efforts to cure phthisis. Opinions differ, however, as to the value of particular means or methods employed, and in phthisis it makes some difference, not only as to HOW but also as to WHERE they are employed. To show "how and where" I have obtained results, which are fully equal to the best, is the object of this paper; and, in view of the great mortality from this disease, and the great difficulties encountered in its treatment, it should require no excuse for an additional paper on phthiso-therapy, if the contribution offers any prospect at all for placing the management of the disease upon a basis whereby the prospects for the individual case would be improved, and, on the whole, a greater percentage of recoveries would result.

The disproportion between the lungs and heart, as the essentials of the phthisical habitus or so-called paralytic thorax, whereby the small or weak heart is unable to carry on a sufficiently vigorous circulation to assure perfect nutrition of the lung-tissue, and especially the apices, has long since been looked upon as the essential factor in phthisis; and, although we now know the tubercle-bacillus to be the sole active agent in tubercular processes, nevertheless this theory affords the best explanation of the conditions apparently essential to the growth and development of the bacilli, and disposes at the same time of the problem of inheritance, inasmuch as this predisposition may be transmitted from similarly afflicted or phthisical parents, or those whose constitutions are otherwise seriously impaired, as, for instance, from syphilis and other severe and debilitating influences.

To overcome such disproportion, by increasing the quantity and quality of the blood, and securing sufficient heart-force for a free and unobstructed circulation, through the agency of nutrition in its widest sense, has been the underlying principle of all my management, both in private practice and in special institutions for consumptives, and I have abstained from local or general antiseptic treatment, with a view of attack upon the bacilli, so far as I found the remedies or methods to conflict with the best nutrition of the patient. And I find with increasing facilities and experience my results are as satisfactory as I could have hoped them to be some years ago, at the time when the "bacilli destruction" was so strongly advocated and sought for. Even if I could then have destroyed every germ in the tissues of my phthisical patients, it must be plain to any one that, aside from the constantly recurring infection of a most favorable soil, much would have to be accomplished to bring about the repair of the lesions in the diseased lungs, although entirely free of the tubercle germ. Of course, I fully acknowledge that a remedy harmless to the patient and destructive to this special micro-organism, in addition to our present resources, would be of inestimable benefit; but, in the absence of such, the duty of the practising physician is certainly in the line of perfecting and employing our present means, which would be none the less useful in the future should the desired specific ever be discovered.

To show the improvement in results growing out of experience, and advantages from management upon different plans and in different places, I cannot do better than refer to the following tables, which give the results of my practice for the last ten years in all cases of which I have accurate records, and in which I have been able to ascertain the final result.

The treatment of those cases who remained at home was conducted in an extremely unfavorable climate and a locality in Northern Ohio where consumption is very prevalent. Patients were advised to live an out-of-door life as far as possible, and to exercise short of fatigue. The diet was as nutritious, varied, and adapted to their conditions as circumstances would permit, and, besides symptomatic treatment, such remedies were used as at the time enjoyed greatest professional favor, including the hypophosphites, cod-liver oil, arsenic, creasote, astringent and antiseptic inhalations, parenchymatous injections of phenol and iodine, external counter-irritation, etc.; and the cases sent away for climatic benefits pursued some such treatment under the care of local physicians at the various climatic resorts. The advantages from climate are strikingly evident in the per cent. of recoveries, although it must be taken into consideration that it was chiefly the poorer class who make up the number treated at home, in whom less favorable hygienic conditions, want of good and suitable food, absence of relatively good judgment, many times the necessity fo continued labor, certainly had their influence in favoring the fatal course of the disease.

In connection with these results it is fair to state that far advanced cases, with few exceptions, were not admitted. The management

TABLE I.—*Two Hundred and Forty-three Cases from Private Practice.*

Management and stage.	No. of cases.	Recovered.*	Per cent.	Improved and still alive.	Per cent.	Died.	Per cent.
Treated at home, early stage	94	3	3.2	2	2.2	89	94.6
Treated at home, advanced stage	88	1	1.1	0	...	87	98 9
Sent away for climate, early stage	17	4	23.5	1	5.8	12	70 0
Sent away for climate, advanced stage	44	2	4.5	2	4.5	40	90 9
Total	243	10	4.1	5	2.+	228	93.8

* By recovery in advanced cases is meant that the disease is believed to have been permanently arrested, with subsidence of symptoms and restoration of general health. This explanation applies also to tables II. and III.

TABLE II.—*Fifty-eight Cases treated in a Private Institution in the same Locality, and consequently without Climatic Advantages.*

Stage of disease.	Number.	Recovered.	Per cent.	Improved and still alive.	Per cent.	Died.	Per cent.
Early stage	32	19	59.3	9	27.5	4	12.8
Advanced stage	26	5	19.2	5	19.2	16	61.5
Total	58	24	41.5	14	24.1	20	34.5

TABLE III.—*Twenty-nine Cases treated in a Special Institution at Asheville, N. C., and under Favorable Climatic Conditions.*

Stage of disease.	Number.	Recovered.	Per cent.	Much improved, but gone home before permanent result was assured.	Per cent.	Moderately improved, and gone home.	Per cent.	No improvement, and gone home by our advice.	Per cent.	Died.	Per cent.
Early stage	3	3	100.0	0	...	0	...	0	...	0	...
Advanced stages	26	9	38.4	5	19.2	6	23	4	15.4	2	7.7
Total	29	12	41.3	5	17.2	6	20.7	4	13.7	2	7.0

TABLE IV.—*Twenty-two Cases still under Treatment in same Institution.*

Stage of disease.	Number.	Much improved and prospects favorable.	Per cent.	Moderately improved.	Per cent.	No material improvement or change either way.	Per cent.	Growing worse.	Per cent.
Early stage	6	5	88.3	1	17.7	0	...	0	...
Advanced stages	16	6	37.5	4	25.0	3	18.7	3	18.7
Total	22	11	50.0	5	22.7	3	13.6	3	13.6

was practically the same as pursued with the next class of cases, and will be described in detail further on.

Of the cases reported as recovered I am of course aware that relapses may occur in the future, but these must depend very largely upon circumstances which can be controlled. Some of the improved cases in Table III. could have been reported as recovered had they pursued their treatment long enough, and the percentage of deaths will, of course, increase by the results in the cases discharged previous to permanent arrest of the disease.

The final results in cases still under treatment bid fair to equal, if not exceed, those in the cases discharged in Table III.

The scarcity of early stage cases necessarily diminishes the *general* percentage of recoveries, and the favorable results at that period of the disease should be sufficient ground for placing such cases under proper care, and otherwise favorable conditions upon the earliest manifestations.

Comparing the results "without climatic advantage" with those obtained at Asheville, the evidence is certainly in favor of climate, as we would naturally expect; especially when it is remembered that we admit here without any discrimination as to the prospects of the cases. Several were thus admitted who arrived here in a condition that they could not even be sent back, but died in a few weeks.

The influence of climate is equally apparent in Table I. Several of the recovered cases made such recovery at Asheville; and the immunity from phthisis of the native residents is well established by the labors of Drs. Gleitsmann, Marcy, Lloyd, Segur, and others. A careful investigation of all deaths from phthisis which have occurred at Asheville within the last year,—eleven in number,—made by the writer, shows that only one can be considered as occurring in a resident, a negro; all the others came here from abroad for their health suffering from the disease.

The following table shows the result of meteorological observations made at the United States signal service station, under my charge, during last winter. These observations will be continued in the future. Observations on electric tension and percentage of ozone will be added, and monthly reports may be had of the writer upon application. The hygienic conditions of the city of Asheville are now very good, and the recent completion of a thorough system of sewerage leaves little to be desired in this direction.

Summary of Meteorological Observations of the Winter of 1888–89, made at the U.S. Signal Service Station, Winyah Sanitarium, Asheville, N. C.

Month.	Mean temperature.	Mean maximum temperature.	Mean minimum temperature.	Absolute maximum temperature.	Absolute minimum temperature.	Mean daily range of temperature.	Mean relative humidity.	Mean absolute humidity.	Number of clear and fair days.	Number of cloudy and rainy days.	Number of days without sunshine.	Number of days on which 0.01 inches or more of rain fell.	Total amount of rainfall and melted snow in inches.	Snowfall in inches.	Number of days on which .10 inches or more of snow fell.	Mean barometer corrected for altitude and temperature.	Direction of prevailing winds.	Mean force of wind on scale of 0 to 6.
November	48.40°	60.12°	40.66°	69.50°	28.40°	19.16°	64.20	2.314	23.0	7.0	2	...	3.40	0	0	30.18	N.W.	1.88
December	41.50°	54.10°	36.60°	62.40°	22.10°	17.44°	62.80	2.014	25.0	5.0	1	9.0	2.94	.20	1	30.20	N.W.	1.40
January	38.50°	48.00°	29.30°	59.80°	13.00°	18.70°	66.30	1.966	24.0	6.0	2	9.0	2.59	4.54	1	30.21	N.N.W.	1.98
February	37.00°	46.73°	26.00°	69.50°	6.50°	20.73°	55.60	1.894	24.0	4.0	1	4.0	1.68		4	30.17	N.N.W.	1.06
March	45.00°	55.44°	35.72°	72.80°	21.20°	19.72°	58.40	2.120	26.0	5.0	0	7.0	.43		0	30.08	N.N.W.	1.90
April	56.38°	67.74°	44.12°	83.00°	28.50°	22.66°	53.44	2.754	25.0	5.0	0	7.0	1.45	0	0			
Mean for winter months	44.46°	55.35°	35.46°	69.50°	20.20°	19.73°	60.12	2.177	24.5	5.3	1	6.5	2.09	...	...	30.18	N.W.	1.39
Total	266.38°	332.13°	212.76°	417.00°	120.10°	118.37°	360.74	13.062	147.0	32.0	6	27.0	12.53	4.74	5	181.10	.....	8.36

* Elevation, 2350 feet above sea-level. Latitude, 35° 36′ N.; longitude, 82° 26′ W. (Hours of observation, 7 A.M., 2 P.M., and 9 P.M.) (Self-registering maximum and minimum thermometers, with northern exposure of all instruments, protected from direct rays and radiation from the sun. Barometer correction for altitude averages about 2½ inches; the readings given are reduced to the sea-level.)

KARL VON RUCK, M.D., Observer.

The management to which I wish to call especial attention as productive of the best results in phthisis is the same as pursued by me in my institution in Ohio, and in addition to which we have here a climate which affords immunity from phthisis. Such locations exist in the United States in considerable number, and have, as a rule, one factor in common,—*i.e.*, elevation.

The favorable influence of moderate altitude

upon the action of the heart is well known, and I have observed it in most cases who hav ecome under my care since my residence here. Although at first increased, the pulse-rate soon becomes slower, the heart acts stronger and steadier, the vessels are better filled, and one of the earliest effects of this better circulation is a commonly observed increase of appetite. Under the diminished pressure and the otherwise favorable weather, especially the large number of clear and fair days admitting of out-of-door life, the heart, under the additional influence of judicious diet and exercise, performs its functions with greater ease, circulatory disturbances disappear, failing compensation is restored, and the nutrition, both general and local, cannot but be favorably influenced.

Apart, however, from climate, and referring to Tables I. and II., I would call attention to the better results obtained under management in a special institution as compared with those in private practice. The explanation for this must lie in the constant medical supervision, whereby all indications may be promptly met and injurious influences guarded against, and in the better facilities for strictly carrying out measures resorted to, in an institution properly equipped and conducted. It is remarkable, too, in this connection, that whereas in the two hundred and forty-three cases from private practice, hæmoptysis is recorded to have occurred in thirty-nine per cent., there were only two cases of hæmoptysis in the one hundred and nine treated in institutions, and, indeed, these were due to overexertion, against which the patients had been particularly warned, and previous hemorrhage formed part of the history of twenty-one cases. Other comparisons as favorable to treatment in special institutions could be made in cases with laryngeal affections, who pursued a much better course, owing to the regular care and treatment given ; and pleurisy with effusion, pneumonia and pneumothorax did not occur in any single case, whereas these complications occurred in quite a number treated in private practice.

It has, however, been urged against institutions that the congregation of a number of patients suffering of the same disease would be productive of depressing influences upon some specially sensitive natures. It must be that such sensitive natures are not frequent, for I have not found them in my cases ; on the contrary, I find that newcomers take considerable encouragement from the favorable progress made by their seniors in residence. Neither is there any specially marked appearance of illness in an institution, because the frequently accompanying friends are, of course, not ill, the improved and early stage cases have nothing particularly suggestive of disease in their appearance, those very ill, as a rule, are for a considerable portion of their time in bed on account of fever, and when out of doors prefer to be placed upon some quiet spot upon the grounds or a protected place. On the whole, I believe this objection to have originated from theory rather than observation, and if it had any value, could be urged against the residence in hotels and boarding-houses of any open health resort for consumptives with even more force, as there sick people also are congregated, with no effort on the part of the owners to control them in their desire to keep up and around as long as they find strength enough to do so, appearing in the public rooms and at the dining-table coughing and expectorating, when they should be in bed ; circumstances which never occur in a well-managed institution. That antiseptic precautions, with care of and disinfection of sputa, and the general hygiene of a place, under the care of a medical man, would also be more thoroughly carried out than in private boarding-houses or hotels, where, as a rule, these matters receive no attention at all, requires no special mention.

When a patient is admitted, a full history and a complete diagnosis, including examination of sputa and the urine, is obtained. If there is fever, the patient is put to bed, and its character, with the maximum and minimum, respectively, afebrile period ascertained. He receives now general advice in regard to out-of-door life and exercise, and, as to the latter, he is particularly cautioned against overexertion leading to much increased heart action and consequent injury. The amount and kind of exercise is carefully prescribed for each individual case, and becomes the subject of frequent consultation. General rules are upon the door of each room, and include especial directions regarding the care of tubercular sputa, which must never be deposited except in the special receptacles therefor provided. Patients who cannot go through their meals without cough and expectoration receive their meals in their room or upon the verandas. Alcoholic stimulants are not allowed, except upon the physician's prescription, who regulates the quantity, quality, and time for their use, when deemed necessary. The burning of gas or

lamps during sleeping hours, as vitiating the air, is prohibited, but candles are placed near each bed, so a light can easily be made, if required. The house is provided with hot-water heat, and fireplaces in addition; the temperature in winter for daytime is maintained at 70° F. in all parts, and at night at 60° to 65° F., but can be increased or diminished in every room, as may be desired. The windows during daytime, except in the coldest weather, are kept more or less open, and ventilation for each sleeping-room is provided for day and night. Bath-rooms and closets are in the house. The hygiene of the skin is carefully attended to by daily bathing with strong salt solutions, to which alcohol may be added, followed by thorough rubbing (preferably before breakfast). If the patient is too weak to go through this course before breakfast, he receives eggnog or hot milk before rising. While free of fever, he is required to spend all his time, excepting sleeping hours, out of doors, either upon the extensive porches or the grounds, but protected from wind and dust, where seats and reclining-chairs are provided for rest. The diet for patients free from fever is nutritious, palatable, and varied, and, with the exception of pastry and fried dishes, the same as well people would eat and enjoy. Milk is furnished *ad libitum*, and can be had between meals, or koumiss is furnished instead. Patients who have fever receive, as a rule, only liquid food during the hours the temperature is elevated,—koumiss, milk, soups, gruels, broths, pancreatic emulsion in milk, lactated or peptonized foods if required, and at frequent intervals.

The Management of Fever.—In all cases rest and diet is chiefly depended upon, and the rise of temperature is anticipated by sending the patient to bed, if possible, an hour before the time of rise on the previous day; his bed is brought close to the window for the admission of sunlight and fresh air. The diet is simple, and liquid if it is found that solid food influences the temperature unfavorably, or is not well digested in the presence of fever. In many cases this simple management is all that is necessary to a gradual gain of an afebrile state. In cases where this proves inefficient, the administration of wine, preferably Hungarian Tokay, an hour before the expected rise, or even whiskey or cognac, and, when necessary, repeated an hour later, with or without the application of an ice-bag over the heart after the fever has risen, will lead to the desired result; not acting like antipyretics, but by a steady influence from day to day both upon the maximum reached and upon the duration, the afebrile period is finally reached. Cases in which the rise occurs with chill receive the wine or brandy hot, and hot-water-bags are applied to the extremities in anticipation of the chill, the patient is carefully guarded from influences which chill the surface, and even the use of cold water for washing, or getting out of bed for any purpose for several hours before the expected chill, is avoided; if the ice-bag is used, much care is required in making sure that the temperature is several degrees above the normal, and the surface temperature equal, before its application. A competent attendant is required, if the chills occur during the night, to see to these particulars.

I have not used a drachm of antifebrin or antipyrin to control fever since I began to follow this course of management, and have frequently seen patients gaining in flesh steadily during the time such management was necessary, and am convinced of its superiority to the continuous use of antipyretics; the extra labor involved is amply compensated for, by the very satisfactory results. When the fever is off, the patients go out of doors, and take exercise according to their strength and its influence upon the heart. Many times I have found irregular rises of temperature to be due to faulty digestion, mental excitement, or physical overexertion, and frequently to betray some indiscretion on the part of the patient. Such possibilities need to be borne in mind, and require investigation when irregular fever is present.

Gastric and intestinal catarrh, and other digestive derangements, are present in a considerable proportion of cases, when first coming under treatment, and can frequently be traced to the indiscriminate use of alcoholic stimulants or errors in diet. No material gain in nutrition is possible as long as they exist, and they receive the most painstaking care and attention by excluding injurious influences and by direct treatment, if necessary. Frequently the withdrawal of alcohol and regulation of diet is sufficient; in gastric catarrh, which does not yield to medication in addition, I find that the washing out of the stomach, with or without feeding through the tube, is productive of the best results, and furnishes the best guide as to the quantity and quality of food most readily digested. In intestinal catarrh, with or without tubercular changes, a raw beef diet, together

with milk, peptonized if necessary, or in the form of koumiss, is very useful, and the administration of Gehe's preparation of salicylate of bismuth has been more beneficial in my hands than any other remedy. Unless extensive tubercular lesions of the bowels and mesentery are preventing, or severe structural changes in the liver are interfering, these complications, as a rule, yield to proper management, and with their disappearance the patient enters upon a period of improvement.

Pulmonary hemorrhage, as stated elsewhere, rarely occurs in an institution. My practice is in accordance with the rules laid down by modern authors, and consists in rest in bed in all cases, in the milder forms, in the use of opiates to allay nervous excitement and cough, ergotin or sclerotic acid hypodermically, an ice-bag over the heart, and an additional one over the supposed source of the hemorrhage, management of diet, swallowing bits of ice, and eventually securing evacuation of bowels without straining. The patient is kept in bed until every trace of blood has disappeared from the expectoration.

In violent cases the danger of suffocation requires first consideration, and on that account we may have to abstain from hypodermics of morphine; or on the contrary, it may be necessary to exhort the patient to cough, to remove coagula from throat and larynx with the fingers, and resort to stimulants when cyanosis begins to appear. I am quite sure that some years ago I saved the life of such a case, in whom hypodermics of ether proved a most quick and powerful expectorant. During such management the means recommended for milder cases are also employed, but morphine is only given when the danger from obstruction of the air-passages is passed; subsequent management is the same. In obstinate cases other remedies are, of course, to be resorted to, and if I have occasion, in the future, shall make use of ligation of the extremities, from which Volland reports a prompt and favorable result in a very severe case.

Cough and Profuse Expectoration.—The cough does not often require special treatment, if other management, and especially that of fever, is thoroughly carried out, and at most a small Dover's powder, or minute dose of codeine, may be necessary to allay unavailing efforts at expectoration. The latter, however, when profuse, in the stage of softening and suppuration, must be favored in every way possible,—by position, inhalations, and by judicious use of stimulants; and being only a symptom, the removal of the cause is to be striven for by taking advantage of every means to check waste and improve the nutrition, as the best means we have to arrest the suppuration. The expectoration from the bronchial mucous membrane, and from formed cavities, is much diminished by a dry condition of the inspired air; and creasote, or inhalations of balsamic vapors, have frequently exerted a favorable influence in my cases. Terebene also is of occasional benefit. Out of thirteen cases treated by *Weigert's method of hot-air inhalation*, for various periods of from two weeks to three months, I have seen improvement in this respect in two cases only, and this improvement I attribute to the relatively *dry* state of the heated air, for *it is not hot air that we really administer* by this method. From experiments conducted with great care I found that the temperature claimed to be obtained for the air in the lung is only obtained in the heating chamber of the apparatus; that with the valves of the machine in place, the *inspired* air in the mouth-piece ranges from 160° to 200° F., according to the depth and rapidity of inspiration; and that the air of *expiration* (ascertained with all proper precautions) was from 97.6° to 98° F. With the valve, which prevents the return of the expired air into the heating chamber, removed, the effect became greater, especially for the air of inspiration, reaching 250° to 300° F., but the expired air never exceeded 101½°. The same temperature existed in the mouth. In the axilla it was 98½°, in the rectum 99° F. I found that with that valve removed, and the thermometer of the machine at only 200° C., the inspired air at 280° F., the sensation of heat in the mouth, throat, and trachea became almost unbearable, provoking severe cough. The rubber mouth-piece became so hot it could not be held between the lips but for a few respirations at a time. It would, therefore, appear that the heating of the air in the lung is practically impossible, and we would expect this, after considering the free circulation of blood through the lung, the minute spaces containing the air in the parenchyma, and the thereby favorable conditions for absorption of heat and equalization of temperature; and to heat the lung air or lung tissue would imply the heating of the whole quantity of blood in the body. From my observations in practice I have had no other results, except diminution of the amount of expectoration in two cases, which, as stated before, I ascribed to the relatively dry air. In all other cases the

effect was either negative or positively injurious, by producing severe cough, and irritation and extension of tubercular ulceration in the larynx, which had been in a state of healing. In no case could I observe any influence upon the number or form of the bacilli in the sputum, or upon the general health of the patients. I have seen the same diminution in quantity of expectoration from the use of chemically-dried or hot-air inhalations, three years ago, when I used these methods in my institution in Ohio, and find that, other things being equal, there exists a certain relation between a dry or moist atmosphere to the total amount expectorated. To determine this more accurately I have for some time conducted some experiments, with a view of ascertaining the amount of watery vapor exhaled from the lung at different states of humidity of the atmosphere, and although these labors are not fully completed, I have determined that the higher the dew-point of the inspired air, the less watery vapor is given off from the lungs, and that it is the *absolute* and *not the relative humidity* which stands in relation to the same, as will be seen from the above table showing the results of ten experiments.

Table showing the Relation of Absolute Humidity to the Amount of Moisture given off by the Air-Passages.

Number of experiment.	Air of inspiration.					Air of expiration.					Excess of moisture in air of expiration over air of inspiration in grains per cubic foot of air.
	Dry bulb.	Wet bulb.	Dew point.	Relative humidity.	Absolute humidity in grains of moisture for each cubic foot of air.	Dry bulb.	Wet bulb.	Dew point.	Relative humidity.	Absolute humidity in grains of moisture per each cubic foot of air.	
1	28.3	21.4	— 4	29	0.471	97.7	96 5	97.0	96	18.146	17.657
2	47.0	35.0	+ 10	22	0.873	98.0	97.0	97.0	96	18.146	17.273
3	20.0	19.5	18	93	1.160	98.0	96.8	97.5	96	17.882	16.722
4	40.0	34.5	26	57	1.676	98.0	97.1	97.0	96	18.146	16.570
5	34.0	33.0	31	90	2.034	98.0	97.2	97.0	96	18.146	16.102
6	82 8	58.7	42	23	2.955	98.0	97.1	97.0	96	18.146	15.191
7	72.5	59.4	50	45	4.077	98.0	97.5	98.0	100	18.674	14.587
8	63.0	61.0	60	89	5.746	98.0	97.9	98.0	100	18.674	12 928
9	85.4	75.5	71	63	8.241	98.0	98.0	98.0	100	18.674	10.433
10	80.3	77.8	77	89	9.964	98.0	98.0	98.0	100	18.674	8.728

But to recur to the management of softening and suppuration: it frequently taxes the powers of the patient to the uttermost, and often beyond his endurance. To keep him up depends upon the conditions of the digestive organs and those of assimilation. If these have not become seriously impaired, we can force nutrition, and the more liberal the diet can be, the better are the prospects. Additional aid results from rectal feeding and inunction of the skin with pancreatized cod-liver oil, and I have frequently been able to check the loss of flesh by these means.

Pleurisy, especially dry and circumscribed, occurs frequently in the course of phthisis, and by the resulting adhesions over softening areas or over cavities may induce a better circulation through the underlying structures by establishing anastomosis with the intercostal vessels. In the treatment, rest, with counter-irritation, is, as a rule, all that is required to relieve the pain. More extensive forms, and with effusion, I have not seen in my one hundred and nine cases treated in institutions, but have met them occasionally in private practice. Since I have treated such, after the recommendation of Robinson (*British Med. Journal*, 1883), with doses of 20 to 30 grains of chloride of sodium every two or three hours, I have not been obliged to use the aspirator in the serous forms. Purulent exudations require, of course, early evacuation and thorough drainage.

Catarrhal affections of nose and throat, and especially nasal stenosis, receive prompt attention as soon as possible after admission by proper local treatment. I am well satisfied that the relief from such conditions materially adds to better nutrition.

Tubercular processes of the larynx do best in my hands under lactic acid applications, or menthol, in the milder forms. I prefer

to use the curette upon ulcerated surfaces, and rub in the acid or menthol pretty thoroughly. Under thorough applications of cocaine the pain is not materially increased by the curettement, and cicatrization is much more rapid. Great care is necessary to confine the acid or menthol to the surfaces intended, and it requires considerable training of the patient to make him tolerant of the necessary manipulation.

To secure a better circulation in the lungs, to provide for their better ventilation, and as a calisthenic for the respiratory muscles, I make use of *pneumatic differentiation*. In the early manifestations of the disease the results derived from this method have been satisfactory in the highest degree, the expansion of the apices becomes much better, the vital capacity increases, a better percussion note, higher position of the affected apex, with increase of the inspiratory and expiratory force, are most constant results. A similar but frequently less marked influence is obtainable in a later stage, when active processes have been arrested. I do not use, nor do I recommend, this method during the presence of active or inflammatory changes, but only under the conditions just mentioned, and believe these to be the limit of useful applicability for this method, and that much harm may result from indiscriminate or routine use of the pneumatic cabinet.

Tubercular diarrhœa and ulcerative processes of the intestine are not often amenable to treatment, and, in view of the frequent uncertainty in diagnosis, we are liable to err in the estimation of the value of remedies applied. Rest in bed, carefully regulated diet, opiates, with astringents, irrigation of the lower bowel when it appears to be the seat of disease, together with iodoform suppositories, are among the means which I have employed with more or less temporary relief.

Finally, I may say that routine methods are as reprehensible in the management of phthisis as in other affections, and that the methods indicated in this paper may require to be modified and adapted to the special conditions of individual patients.

In conclusion I feel justified in stating—

1. That the question as to how and where we would best manage phthisical patients must be answered in favor of well-conducted and equipped institutions, located in a climate possessing immunity from the disease.

2. That the establishment of such institutions is desirable at all such climatic resorts, and, in addition, at places even without such immunity for patients who for any reason cannot take advantage of climate as well.

3. That, in view of our results, scientific medicine has also in phthisis complied with the demands that can reasonably be made upon it,—"to cure disease in its early stages;"—and that the responsibility for the great mortality rests with the patients and friends: and, in case of the poor classes, with the local or general government, if the professional adviser has made an early diagnosis and pointed out the best means for cure.

ASHEVILLE, N. C., May 31, 1889.

THE DIARRHŒAS OF NURSLINGS AND THEIR THERAPEUSIS.

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SIMPLE diarrhœas, or so-called "summer complaints," in adults are usually matters of little moment, being for the most part self-limited. The reverse, however, is true of nursling infants, with whom they often assume most serious characteristics. Among the latter the mortality from this cause in some seasons assumes frightful proportions, and, if we can rely upon statistics as compiled, sixty per cent. of the death-rate is due to intestinal fluxes. This is scarcely a creditable showing for us as medical practitioners, nor to therapeutics as a science, the causes being fourfold:

First.—Because of the constantly increasing sensitive and actively nervous organism of infants, derived by heritage from parents, due further to the unhygienic engraftments of so-called "advancing civilization."

Second.—General need of familiarity with the laws of hygiene and infection, and lack of knowledge of the physiological phenomena incident to digestion and nutrition in, and in the management of, babes.

Third.—Ignorance of predisposing causes and the pathological changes induced; and

Fourth.—Imperfect understanding of therapeutics in relation to the second and third of these propositions and of the chemico-physiological changes induced by the disease, and by remedies employed with a view to relief,—consequently improper treatment.

What is diarrhœa? is a question that continually obtrudes itself, frequently without satisfactory definition, and apparently with little practical result, so far as prophylaxis and better treatment is concerned, since the

measures advocated for the most part are mere repetitions and transmogrifications of the old and so-called "classic" methods which demand astringents, opiates, carminatives, and antacids. Recently antiseptics have been added to the repertory, embodying tacit admission of its inutility; and when we review the etiology and pathology of this class of complaints, the admission becomes a positive certainty.

Ignoring specific fluxes, such as cholera infantum and those arising from organic lesions, we have to deal with what?

In the majority of instances the glib assurance that all diarrhœas are diseases due to the presence of bacteria is of little aid to either diagnosis or treatment. If microbes are, as often asserted, the vicious element, nevertheless the same causes, results, and sequels confront us as did before these infinitesimals obtained to our knowledge. Further, it is a moot question whether micro-organisms are the factors of production or merely the derivatives thereof. Like the poor, they are "always with us;" and since the definite results of the disease are known, as well as the chief factor in its rise (suppressed digestive activity), it seems almost an act of folly to grope in the dark to formulate a theory from assumption or unknown cause, and to the end of securing an unknown specific.*

In diarrhœa we have a flux that, harmless or salutary in its inception, may so far overstep physiological boundaries as to be detrimental and, perhaps, dangerous. When the latter obtains, the flux possesses a double significance in that it is not merely depleting the economy alone, but is also sapping the source of supply by interfering with the absorption of nourishment. It is now a malady that, practically, at least, "burns the candle at both ends," and the accessions of cause may be more rapid than physiological attempts at removal.

Pathological changes other than from inflammation of the gastro-intestinal mucous membrane, due to irritation in the simpler fluxes, are indefinite; but ptomaïnes may be developed indirectly through chemical changes occurring within the economy or by direct introduction from without.

Diarrhœa, from a general stand-point, may be considered as simple-acute, acute-inflammatory, and organic: *Simple-acute*, when the alvine evacuations are frequent, loose, or liquid, without admixture of serum or other sanguinolent product, and not dependent upon, or aggravated by, coexistent inflammation or lesion; *acute-inflammatory*, when derived through excessive irritation leading to diffused inflammation, accompanied by serous or other sanguinolent exudation; *organic*, when dependent upon a morbid condition of the primæ viæ, and accompanied by manifest structural changes. This somewhat arbitrary classification is adopted, not as a measurement or precise delineation of infantile intestinal fluxes, but rather as a matter of convenience, whereby all may be brought within desirable limits for discussion.

The diarrhœas with which we are chiefly concerned are of the first two classes,—viz., simple-acute and acute-inflammatory,—which may both be further subdivided as acute and acute infectious, all of which are dependent upon changes occurring in the economy of the small intestine and stomach. In nurslings the larger bowel is never involved save through extension, it being chiefly a convenience, for as yet it serves little purpose save as a source of exit for the effete and noxious products of digestion and assimilation. Further, fluxes dependent upon changes in the colon and cœcum are rarely of local significance, but referable to structural degeneration and changes in other portions of the viscera or economy at large, and superimposed by inflammatory exudations of the lesser bowels, as in *tuberculosis mesenterica*, for instance.

Diarrhœa may arise from:†

* "Among the micro-organisms the class *schizomycetæ* are numerously represented in the healthy and diseased intestine. Within from four to eighteen hours after birth there are large numbers of bacteria, cocci, and the *bacillus subtilis* and *bacterium coli commune* (Æscherich)—the latter in the large intestine—in the remnants of digested milk. Besides, there is the *bacterium lactis ærogenes*, to which is attributed the action of decomposing milk sugar into lactic acid, carbonic acid, and hydrogen, thus giving rise to the intestinal gases. All these facts, showing the presence of immense quantities of micro-organisms, prove, however, nothing in regard to the etiology of diseases. Thus it appears that the entrance of bacteria is not the cause of diarrhœa."—JACOBI.

† Dr. Ballard (*Brit. Med. Journal*) declares: "The essential cause of diarrhœa resides, ordinarily, in the superficial layers of the earth, where it is intimately associated with the life-processes of some micro-organism not yet detected, captured, or isolated; that the vital manifestations of such organism are dependent, among other things, perhaps, principally, upon conditions of season and on the presence of dead organic matter which is its pabulum; that, on occasion, such micro-organism is capable of getting abroad from its primary habitat, the earth, and, having become air-borne, obtains opportunity for fastening on non-living organic material, and of using such organic material both as nidus and as pabulum in under-

a. Indigestion and non-assimilation, later proceeding to debility and exhaustion.

b. Absorption of poisonous and unhealthy gases,—miasm, improper hygiene, etc.

c. Improper nourishment, as derived from the parent, leading to *a*.

d. Microbes or ptomaïnes, introduced from without the economy, or spontaneously developed within, through physiologico-chemical changes, due also to *a* and *b*.

e. Excessive secretion of bile or its suppression, favoring *d*.

f. Exposure to cold, damp, heat, etc., securing *d*, through *c* or *a*, or both.

g. Mental agitation and reflex irritation, promoting any or all of the foregoing.

To a proper understanding of summer fluxes must be brought a familiarity with the physiology of infantile digestion: with this microbes may be practically or wholly ignored. In nurslings there is always a primary and normal tendency to looseness of the bowels, owing,—first, to the nature of the food ingested; and second, to the fact the larger intestine, whereby the dejections might be depleted in part of their fluid constituents, are inactive to absorption, digestion and absorption being strictly confined to the stomach and lesser bowel. Digestion in the infant, to a certain extent, is rudimentary; little ptyaline is excreted before the sixth or eighth month after birth; and any food substituted for normal mother's milk that contains an excess of starch is necessarily more or less irritative, since the particles of this product pass through the intestines almost untransformed. Herein is the objection to bottle-feeding and ordinary artificial foods of all classes.*

Indigestion may be a product of either underfeeding or overfeeding, constituting improper food-supply, and, consequently, from a physiological stand-point, starvation. Continued indigestion is especially apt to induce relaxation of the mucous coat of the intestines in infants, and thus a diarrhœa that began as a simple mucous catarrh may speedily become serous, colloquative, and a lethal flux. In the milk of anæmic mothers there is frequently an excess of sugar, in which case oftentimes the solid matters are diminished, and indigestion supervenes, frequently to the obtainance of a most obstinate diarrhœa in the infant. Indeed, every non-organic and non specific diarrhœa, reflex causes excluded, no matter what the inciting factor,—whether heat, cold, improper nutriment, bacteria, ptomaïnes, etc.,—obtains only with the *sine qua non* of suppression of digestive activity. The old Scottish aphorism of the "fear of God" in connection with "open

going various phases of its life history; that in food, inside as well as outside of the human body, such micro-organism finds, especially at certain seasons, nidus and pabulum convenient for its development, multiplication, or evolution; that from food, as also from the contained organic matter of particular soils, such micro-organism can manufacture, by the chemical changes wrought therein through certain of its life-processes, a substance which is a virulent chemical poison; and that this chemical substance is, in the human body, the material cause of epidemic diarrhœa. It will be observed that this provisional hypothesis is sufficiently elastic to include, as a common cause of diarrhœa, chemical products of bacterial life manufactured indifferently within or outside of the human body. Elasticity, to this extent, of a provisional hypothesis, has been necessary for the reason that, in the present state of our knowledge, certain cases and groups of cases of diarrhœa, not distinguishable from epidemic summer diarrhœa, have now and again been found to possess the faculty of being directly communicable from person to person."

Upon the results of this inquiry Dr. Ballard suggests the chief aim in prophylaxis is: "To prevent fouling of the soil with matters out of which the material of diarrhœa can be produced; to secure domestic cleanliness, dryness and cleanliness of soil, lowering of ground-water, prevention of rise of ground-air, the free movements of air, protection of food from infection, due regulation of sewers, etc."

* All artificial foods are more or less pernicious on this account, though it is possible that some starch may be digested at a very early age,—in individual cases. Examples of infants thriving on undiluted cow's milk and upon patented foods are not rare, but such only prove that the digestive processes permit of more or less latitude, or, as Jacobi puts it, "that Nature does no routine work, and that the sum total of vital processes does not respond to certain influences like reagents in a chemical test where the same proceeding always yields the same result." Indeed, there is *no food* unless quite absurd on which certain infants *will not* thrive. Again, people insist upon giving their infants articles of food they know nothing about,—foods the composition of which is a trade secret, hence with no means of determining their adaptability. If the manufacturer deigns any explanation, it is to the effect that *his* product is the *only* one in which the proportion of albuminoids to carbohydrates is chemically and physiologically correct, and that the price is—so and so much—always exorbitant. In these matters mothers seem smitten with folly and blindness, and readily place themselves and their infants at the mercy of designing manufacturers and adventurers whose sole aim is gain, forgetting in their fears of the milkman that the wares of the latter are seldom adulterated with anything worse than water, forgetting also the trite aphorism that what is "meat" for one may prove "poison" to another. When an artificial food is demanded other than cow's milk, nothing in my experience answers so well as oat-meal water, duly strained, to which may sometimes be added a little mutton broth, and the whole peptonized if it seems desirable.

bowels," expresses theologico-medically a physiological necessity, equally applicable to threatened constipation or to flux, since it is intended to convey the idea of maintenance of perfect digestive and excretive harmony; and diarrhœa, regardless of inception, is neither more or less than a flux established by Nature in an attempt to rid the economy of some effete, irritating, or poisonous matter, that primarily is a salutary process, becoming morbid only by perseverance and extension; in other words, it is "a good servant," but equally "bad master."

Food.—The milk of woman approximately represents 87.96 parts of water to 12.04 parts of solids, the latter being divided into 2.70 casein, 3.48 fat, 5.78 sugar and salts,—sodium, potassium, magnesium, calcium, phosphorus, sulphur, iron, and silica. Cow's milk, on the contrary, which is the most common substitute for human milk, represents but 84.28 of fluids to 15.16 of solids, presenting 1.27 excess of casein and albumen, 2.99 of butter, but 1.44 less of sugar, salts, etc. It also contains a small portion of starch.

In the foregoing we find in the proportions of casein, albumen, and starch, physiological reasons for the more frequent appearance of indigestion and diarrhœa in infants that are bottle-fed upon cow's milk, which is more rich in the articles most difficult of digestion in the primæ viæ of the nursling, while the supply of blood-, bone-, and nerve-making materials (salts, sugar, etc.) are deficient. To be sure these figures are, and can be, only approximate, since in the same individual, human or animal, there are variations not only in the milk-supply but in the constituents of the milk itself. For instance, both exhibit a greater percentage of albumen, casein, and butter at night than in the morning; and it must, moreover, be remembered that the normal infant stomach is incapable of digesting more than one per cent. of casein, or more than about two and four-tenths per cent. of fat. Again, it is a well-known fact that the surroundings of the lactating individual, including food-supply, materially affect the quantity and quality of the mammary secretion. It is not, therefore, a matter of indifference how the mother or foster-parent is nourished, and as regards the cow that affords the milk-supply, brewers' grains, lush-grass, refuse slops, and like foods that are employed because of their supposed ability to increase the secretion of the udder, and also on the score of frugality, are the reverse of economical so far as the rearing of infants is concerned, to whom the milk is virtually "offering a stone" instead of giving "bread." It should be remembered, moreover, that while the immature nutritive apparatus of infants excels in absorption, it is deficient in digestion as compared with adults.

Digestion.—Since suckling infants do not masticate, and exhibit but slight evidences of salivary secretion during feeding, the diastatic effect is not instantaneous; but, on the contrary, the flow of saliva is to a considerable extent secondary to deglutition. This is the secret, after feeding, of the phenomenon denominated *druling*. Nurslings are but moderately dependent upon saliva to further the act of digestion, and the human infant makes little demand upon the parotid and submaxillary glands before the sixth or eighth month, or later.

Arrived at the stomach, the milk is thoroughly mixed with the gastric secretion, when, by action of the milk-curdling ferment, the casein is coagulated, and the curd containing the fat globules floats in a clear fluid (whey), which holds in solution the salts, sugar, and albumen. As digestion progresses, the casein is turned into peptone, the fat is set free, and being partially emulsified, gives a milky or turbid color to the whey. The stomach of the nursling contributes more to digestion than that of the adult, since, when the food is of proper quality, peptones are rarely discovered in the intestines, or the remnants thereof in the pylorus: presumably also nursling stomachs may absorb nourishment directly in some degree, since, for a brief period after birth, the peptic glands of the cardiac and pyloric portions closely resemble muciparous follicles.

Here an important consideration in connection with diarrhœa presents itself,—viz., the quantity of water contained in the food, which quantity, as before noted, should average nearly ninety per cent. of the total milk ingested. Water is in especial demand for the formation of hydrochloric and lactic acid, and also of pepsin, and is essential to the action of the latter in forming peptones: the effect of the gastric fluids upon the casein also requires a large quantity of water; consequently any circumstance that tends to concentrate the food by reduction of fluids tends to interrupt digestion.* The caseous matter, instead of parting with its oily constituents,

* It is an old observation that water facilitates the digestion of casein; and when, in artificial experimentation, artificial digestion of caseous matters ceases, it can be re-established by the addition of water.

passes on into the duodenum, where this process is impossible, provoking irritation, abnormal stimulation, determination of circulation, ending in flux. Fat (butter), to be sure, is not digested in the stomach, but is separated and prepared for the changes that take place when it encounters the bile and pancreatic products. Again, as these last are but moderately efficient in sucklings, food too rich in fats, and that have not undergone proper changes in the stomach, prove too onerous for duodenal digestion, and secure the same pernicious effect. Indeed, it is a general observation of physiologists that derangements of nurslinghood more frequently arise from lack of sufficient water in the stomach (and consequent lack of pepsin and hydrochloric and lactic acids) than from any other causes; and lactic acid, derived from milk sugar, is the essential requirement for the first stage of digestion.

When done with the food, the stomach expels into the duodenum the residue,—viz., all starch that has not been converted into sugar, any cellulose that may be present, all parapeptones and dyspeptones resulting from proteinates, all fats, and some proportion, perhaps, of salts. These are now brought in contact with—first, the biliary secretion; and, second, the secretion of the pancreas. The remainder of the starch is thus converted into sugar, the fat is further emulsified that it may be absorbed by the intestinal villi, and the remaining albumen changed into soluble material. The two latter effects are never observed on autopsic examination of infants that have succumbed to diarrhœa, hence it is evident that this lack of digestion is a prime factor in such conditions; and further, that the pancreas, which is to a certain extent rudimentary, cannot be depended upon for the performance of its wonted function during an attack of diarrhœa. The pancreas is functional and active only when the intestinal fluids are alkaline, and this alkaline reaction depends upon the presence of sodium phosphide; consequently, when through lack of soda the fluid becomes acid, the result is a diarrhœa that interferes with, or altogether arrests the processes that tend to the formation of blood, bone, and muscle, and general exhaustion follows more or less rapidly, in accordance with the previous condition of the creature.

It is generally believed that the fat acids saponify with the alkalies of the duodenum. In such case, when the alkalies are sufficiently abundant to decompose fat, but not sufficient to the formation of soap, the result must needs be an excess of fatty acid; and when this occurs the alkaline intestinal fluids, especially the biliary secretion so essential to duodenal digestion, are neutralized. Thus not only is the effect of the bile present destroyed, but, in consequence thereof, less bile is secreted; the biliary products are most essential to the absorption of chyle, but are not produced in sufficient quantities when the food is but incompletely transformed. Again, since the fæces almost always exhibits slight acid reaction, it is to be supposed that this is in consequence of the completion of the digestive act, and therefore not abnormal; but this acidity in infants is increased or decreased from normal with the greatest facility.

All fat is not absorbed in the act of digestion, since a portion leaves the intestines in the form of soap, another portion as free fat acid, and still another comparatively unchanged. In diarrhœa there is a large amount of fæces, the detritus of which is principally casein and fat, with more or less intestinal epithelium. In health, on the contrary, casein simply is never present, hence its detection is *prima facie* evidence of over- (*i.e.*, too rich) feeding, or of interference with the digestive act by reason of an excess of free acid in the stomach. An important application of this fact is found in the succeeding paragraphs:

"As it is true that fat is not completely absorbed, even under the most normal circumstances; as free fat acids are easily formed and accumulated; as they are formed in moderate quantities even in healthy nurslings; as it is known that a surplus is very apt to derange digestion and assimilation, and that it even prevents the normal secretion of either of the digestive fluids, gastric or duodenal; as there is usually a superabundance of fat in the normal food of sucklings; the conclusion is that the greatest care should be taken to insure proper food-supply through the parent."—JACOBI.

It is a simple matter to secure an excess of fat, but quite a different one to secure too little or to keep within bounds; and for this reason a mother whose mammary secretion presents an excess of solids (casein, albumen, butter) may be unable to rear healthy, sturdy offspring. In such case benefit is had by giving the infant to a wet-nurse or hand-feeding with diluted and peptonized milk, or, as morning's milk is much less abundant in casein than that of evening, restricting

nursing to the early part of the day, and bottle-feeding with predigested milk towards evening and at night.

Etiology.—Healthy infants possess a tendency to looseness of the bowels, their evacuations being normally fluid or semi-liquid. This obtains for two reasons,—the condition of the intestinal tract and the nature of the food. Again, peristalsis is extremely active in the young; the blood-vessels and lymphatics are most permeable; the transformation of surface-cells rapid; the inhibitory centres deficient in development; and, finally, there is greater reflex irritability.

All these, taken in connection with the fact the action of the sphincter ani is far from being firm or powerful,—that fæces are not retained in the rectum or colon sufficiently long to permit of any material absorption of fluid constituents,—tend to explain the predisposition to intestinal flux in the young. Atop of this concatenation, we may have the quantity of digestive fluids limited, or the supply of food ingested in excess, resulting in abnormal digestion, provoking fermentation, putrefaction, and irritation; the putrefaction of albuminoids developes an excess of ptomaïnes, that, if absorbed, secure blood-poisoning and nervous reflex irritation, irrespective of direct action upon the intestines. Bouchard declares that enough ptomaïnes are produced in twenty-four hours (in health), by the act of digestion, to procure death, providing excretion were stopped and all absorbed. And T. Lauder Brunton asserts: "The alkaloids which are obtained from the decomposition of albumen are one of the chief sources of diarrhœas." The fluxes resultant upon "taking cold" are due merely to the locking up of normal secretions interfering with digestion to the production of ptomaïnes; and the same occurs from excessive heat, impure air, and improper water supply, etc. Neither are the surroundings of the parent without influence, in which category may be enumerated exposure, overwork, improper food, and all causes that tend to modify or deteriorate the lacteal supply, or to divert nourishment from the lacteal apparatus to supply the general demands of the economy of the mother. True, many physiologists assume an active, busy mother insures a more healthy and hardy child, but this is true only within limits, and in so far as labor tends to restrain the excessive production of casein and fat in the milk. Too scanty lacteal supply, or milk that is greatly impoverished, is *starvation* to the infant. Profuse supply also tends to the *same end* by securing indigestion, if devoid of the proper amount of water, or if fed, as is usually the case, at all times and on all occasions when the child is restless. The supposed manifestations of hunger in the normal infant seven times in ten are due to thirst instead, when water answers a far better purpose than milk, which only overloads and clogs the digestive apparatus. When the food-supply falls short of the requirements of the body, and the tissue elements are insufficiently nourished, the easily-recognized and well-known effects of inanition are observed. In addition to evidence of malaise is dynamic failure and heat reduction (death by starvation is death by cold); there is diminution in the volume of the soft structures, earliest and most extreme in adipose tissue, affecting the muscles, and, finally, though to a less degree, the great nerve-centres. Experiment proves also, when plenty of water is allowed, that waste takes place but slowly; but, when deprived of this fluid, there is rapid expenditure. Impaired digestive power is a constant result of inefficient nourishment and a frequent precursor of tubercular diseases, particularly tabes mesenterica.

When an excess of food over the quantity required by the system is habitually consumed, it to some extent admits of storage in the body as reserve food, especially in the form of fat or adipose tissue. But there is a limit to this. When the diet is habitually in excess, and especially when it contains too great a proportion of nitrogen, there is developed a diathesis or tendency to disease, especially the various disorders of the skin. As a rule, disorders of digestion, once appearing, are more or less constant. The term excess, of course, is a relative one, and has to do with the *kind* as well as the quantity of food, and also depends very much upon individual digestive capacity.

Digestive disorders, therefore, result naturally both from food unsuitable in quality or quantity, and gastric impairment or incapacity; or, to summarize, to a want of relation between the food to be digested and the organism, owing to which the latter finds itself unduly embarrassed in its duties, or entirely incompetent to perform them. The sequel in the infant is diarrhœa.

Simple acute diarrhœas, as a rule, are not febrile maladies *per se* (though by neglect they may become so), but rather partake of the nature of symptoms and warnings; they

are efforts of nature to relieve the economy of some evil in the way of excess, or poisonous or irritating material, and when such obtain, if not so profuse as to threaten exhaustion, are often self-limited and beneficial. In such there are seldom or never direct or material pathological changes, the flux being of the crapulose variety, characterized by discharges every way normal save as to fluidity, requiring little or no treatment other than restriction and dilution of food.

Other acute diarrhœas are alimentary, and may also be infectious. If of the former class, the dejections are yellow in color, small in amount, and contain much undigested matter,—casein, fat, and fatty acids. This is the chylous diarrhœa of some authors, and the sequel of gastric and duodenal disturbance and non-assimilation. Improperly cared for, especially in unhygienic surroundings, it is apt to progress into a dysenteric form, and also become infectious and perhaps epidemic. In the primary infectious form, the passages are of lighter yellow, even approaching a lemon or whitish hue, more numerous, are either acid or neutral in reaction, often fetid, and contain large numbers of microbes, which, perhaps, may play an important part in the pathogeny of the trouble. Such readily assert themselves during weaning or in infants that are continuously and improperly bottle-fed.

Another form is the diarrhœa lienteria, which may be, and often is, indicative of organic disease, probably adynamic or hereditary in origin. It is one of the characteristics of mesenteric tuberculosis, purpura, aphthæ neonatorum, etc. The passages are white at first and of some consistence, but later, occasionally and temporarily stained with bile, and extremely liquid. When not due to organic causes, the trouble lies in an alteration of the secretion of the pancreas, and perhaps that of the liver as well. The food coagulated in the stomach is not transformed into peptones by the pancreas, and passes in an undigested state.

Green and bilious diarrhœas should be classed with the alimentary, and are attended by increased biliary secretion and loose, copious stools of bright yellow, or yellow green, of decided acid reaction. They commonly arise from high temperature and impure atmosphere, usually appear during the first month succeeding birth, are not usually characterized by serious digestive derangement, and are especially prone to be self-limited, and consequently harmless.

Reflex diarrhœas also are observable, dependent upon "taking cold," dentition, etc., in which the passages may be simply mucous, but sometimes assume a serous nature, are yellow, and do not necessarily contain particles of undigested food.

Epidemic diarrhœas in general outlines resemble somewhat both the bilious and lientery, lacking, however, the flow of bile peculiar to the former; frequently they are almost or quite dysenteric in character, are usually accompanied by muco-enteritis, with intense congestion of the mucous follicles, and a generally inflamed condition of duodenum and stomach: the intestines on autopsic examination invariably contain curded milk. The passages are slightly acid, white, or white flecked with green; at first mucous, mixed with intestinal epithelium, they speedily become serous, streaked with blood, perhaps. or even decidedly sanguineous, and perhaps arise from poisoning due to specific bacilli developed through damp, the phenomena incidental to "taking cold," and from overcrowding and impure air. It is by no means rare to find such diarrhœas complicated with other ailments, such as pleuro-pneumonia, congestion of lungs, etc. They are, moreover, infectious, often truly epidemic, and frequently rapidly fatal. The facts are, all infantile nursling diarrhœas not dependent on secondary causes and organic lesions, even to cholera infantum, rarely present definite anatomical changes other than inflammation of the gastro-intestinal membrane.

In all established diarrhœas of sufficient moment to demand special therapeutic measures, there is a morbid excitability and lowered tonicity of intestinal mucous membrane, and a correspondingly rapid exudation of fluid, mucous or serous, into the alimentary tract, while the reflex excitement of the muscular coat of the bowel tends to free and, perhaps, forcible expulsion of the diarrhœal fluid, mixed with the remnants of food imperfectly digested. If serous, the loss of fluid constituent of the circulation, with its saline ingredients, provoke other morbid conditions: thus the secretions at large are diminished, perverted, or obstructed; the blood becomes thick, so that oxygenation is but imperfectly accomplished; and the train of phenomena, primary and secondary, that characterize the malady, rapidly succeed. Now follow inflammatory lesions, aphthæ of the intestines, pyrexia, and the muscular and nervous systems (brain included) become exhausted by imperfect nu-

trition, due to deficient capillary circulation dependent upon poisoning by retained secretions. Meantime, the stomach and duodenum are incapable of performing their accustomed functions, owing to determination to repay the loss entailed by the flux, and are unable to supply the fluids essential to nourishment, and thus retrieve waste, and, unless relief is obtained, collapse speedily follows to fatal ending. Post-mortem in such cases reveals the stomach and duodenum pale and flabby, or as the seat of violent inflammation: and the ileum, jejunum, and cœcum denuded of epithelium, with hemorrhagic infarctions and general low inflammatory condition; and when the dejections are clayey or have been persistently colorless, usually will be found obstruction of the ductus pancreaticus or communis choledochus. Hydrobilirubin, the coloring-matter of the fæces, depends upon the mutual reaction of the biliary and pancreatic fluids.

Again, from inanition and exhaustion, perhaps from ptomaïnic poisoning, the little patient falls into a state of stupor or coma, exhibiting puffy under eyelids, congested and half-closed eyes, pinched nose, pallid lips, and cold extremities, slow breathing, weak pulse, and retracted abdomen, or abdomen tense with gas. This frequently occurs in innoxious diarrhœa, where the discharges are abruptly checked, and affords in such case indubitable evidence of toxic origin.

Dr. Edward Ballard, who, for eight years has been studying for the government of Great Britain the causes of intestinal fluxes, reports (*British Medical Journal*) some very important observations regarding the epidemic dysenteric diarrhœas of infancy. He remarked extensive pathological changes in the bodies of infants who had died from this malady, not only in the intestines but in all the viscera, and not alone in the viscera of protracted cases, but in those of nurslings the total duration of whose illness had not exceeded twelve or fourteen hours. For the most part the intestines were empty, or only contained a little yellow fæcal matter, or a little opalescent mucoid fluid, or the surface was coated with some thick, creamy, catarrhal exudation. "The amount of obvious hyperæmia of the mucous membrane of the stomach and intestines varied; sometimes there was observed some follicular ulceration, both in the small and large intestine. Generally there was more or less inflammatory thickening of the mucosa, and even in the cases of only a few hours' duration, denudation of the epithelium, both of the stomach and intestines. Now and then ecchymoses were seen, or even a little blood effused into the alimentary canal. The solitary and agminated glands of the small intestine were mostly prominent; the mesenteric glands were enlarged. The condition of spleen varied; it was sometimes congested, or exhibited hyaline degeneration of the arteries, or swelling of the Malpighian corpuscles, with degeneration of the central portion of them. The condition of the liver varied; it was either congested, or pale and bloodless, the former condition prevailing in the short, and the latter in those of longer duration; but in every case examined, there was one invariable condition,—namely, fatty degeneration of the liver-cells, slight in cases of short (only a few hours') duration, but pronounced and extensive, or complete in all parts of the organ, when the illness had been protracted. The kidneys, even when normal to the naked eye, were invariably found to be diseased, when examined microscopically, showing inflammatory and degenerative changes, intense glomerulous and parenchymatous nephritis being demonstrated even in cases of very short duration. The lungs, although they might be in parts collapsed, presented marked evidence of acute catarrhal, or catarrhal and interstitial pneumonia. The blood may be inspissated and coagulate imperfectly. There was nothing in the microscopical investigations of the tissues, blood, or excreta to indicate that in the cases which furnished the organs, blood, or excreta sent for investigation the malady was due to any micro organism developing within the alimentary canal, or permeating any of the tissues; but it must not, therefore, be inferred that a specific micro-organism may not, in some instances, be present, and even undergo development and growth, within the body."

Commenting upon the fact that epidemic diarrhœa implicates the kidney as well as the intestinal canal, and in a manner similar to that in which scarlet fever implicates it, Dr. Ballard observes that probably in most cases of diarrhœa that recover, the morbid condition of the kidney clears up, as it does in most cases of scarlet fever that recover; but, just as in other cases of scarlet fever that recover from the immediate illness, the foundation of chronic disease of the kidneys may have been laid,—disease which may, perhaps, under the designation of one of its secondary results, prove ultimately fatal, or which may give a fatal tendency to some future illness from

which the little patient would otherwise be expected to recover,—so it may also be with the kidney affection (similar in character) which is associated with diarrhœa. Indeed, it is not improbable that a previous attack of diarrhœa may have been the origin of many a case of chronic Bright's disease, which, so far as the patient's medical history is concerned, has appeared inexplicable.

To recapitulate: Diarrhœa may be a salutary process primarily, and secondarily an ailment sufficiently serious to endanger life. The bowel, it must be remembered, is not only the medium of absorption of chyle and nourishment, but as well the means of ridding the economy of poisonous, effete, and excrementitious matters that, retained, prove detrimental and dangerous. Further, we must accept the doctrine that we are concerned more or less in the gastro-intestinal diseases of nurslings, with (aside from the development of bacteria primarily dependent upon) failure of complete digestion, and consequently imperfect absorption.

When a mass of objectionable and indigestible food is consumed, diarrhœa is evidence of Nature's attempt to repair the error.* This, too, is the common origin of diarrhœa among infants, and also young animals of all classes and grades, and is due chiefly to the curding of milk and lack of power of the digestive juices to act thereon; a hard, firm, indigestible mass is formed, which no stomach, unaided, can break down, and which, passing through the intestine, irritates and tempts inflammatory action; further, we may have retention in part, with resultant fermentation and putrefaction. For this reason, and also from the fact that they contain an excess of starch, cow's milk and patented foods are objectionable as nourishment for infants, though, as far as the former is concerned, the evil may in great measure be mitigated by dilution with water and peptonization. Morbid curding too often is the result of bolting or hasty consumption of milk, and one of the provoking causes of this in infants is their being hurried, and threatened with removal of the breast when nursing,—a common procedure with nurses and mothers who have household duties requiring attention.

* "An excess of casein in milk is justly feared for its irritating influences, and an excess of fat works in the same way."—JACOBI.

(To be continued.)

THE LEGAL RELATIONS OF INSANITY AND CRIME.

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THE consideration of this subject was brought about by a crime committed by a medical man well known to me. His personal history was shortly this: Descended from a family who had already shown neurotic degeneracy in several of its members, he, as a medical student, was considered odd and peculiar in his manner, which was displayed in foolish and sometimes violent acts, and in a liking for mixing with company below his station in life, and at the same time showing an inclination to intemperance, which, in later life, developed into a confirmed habit. Married to a lady with whom he lived unhappily, the result of this union was two children, one of whom, a girl, he almost idolized. For some time before the evening of the day on which the crime was committed, he had been suffering from pleurisy, which had pulled him down considerably, both mentally and physically, while his eccentricity had increased. He had resumed his professional work, with his left chest full of fluid. After a quarrel with his wife, late at night, he got the child out of bed, as he said, to take to the pantomime, ordered his horse and trap, placed his wife and child in it, drove off, called at the first inn he reached, took them into a private room, and deliberately shot the child dead with a revolver, and then turned the weapon upon himself, the shot impinging a rib, the bullet burying itself in the intercostal muscles, and through the wound later a large empyema discharged itself. After a hard struggle, the patient, some months afterwards, became convalescent. He was tried at the following assizes, convicted of wilful murder, and sentenced to death. Only by the most strenuous efforts on the part of his lawyer and of members of his own profession, the sentence was respited to penal servitude for life.

Abhorrence is naturally awakened in the mind by certain offences, and there is no difficulty in seeing why members of the medical profession feel incensed when they discern, according to their light, a grievous disease punished by judges as heinous crimes. May we not be pardoned for feeling resentment under such circumstances? But our anger should not be hurled against our judges and lawyers, but against the law, which they do not make, but simply administer, and which they are

bound, however imperfect they may consider it, to accept, until the legislature is changed by the voice of the country. That the law requires to be changed, indirectly, by the efforts of the medical jurist, so far as regards the responsibility of disease, it will be our endeavor to show.

Let us turn to inquire what is the law of England with reference to insanity as an apology for crime, and to what extent is that law agreeable with the tenets of medical science. Every judgment given in cases in which the plea of insanity as an apology for crime has been set up since the year 1843 has been established on the answers given by the fifteen judges to the questions put to them by the House of Lords in the case of MacNaughton, tried for the murder of Mr. Drummond, who had been acquitted on Chief-Justice Tindal's directions, that the point for the jury to consider was whether, "at the time the act was committed, the accused had that competent use of his understanding, as that he knew that he was doing, by the very act itself, a wicked and a wrong thing." The general application of this theory would have greatly enlarged the area of irresponsibility, and its declaration produced considerable astonishment.

So far as the answers concern our present remarks, the kernel is summed up by the answers returned to Question II., as follows: "That to establish a defence on the ground of insanity, it must be clearly proved that at the time of committing the act the accused was laboring under such a defect of reason from disease of the mind as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know he was doing anything wrong." This statement has been far from effecting a final settlement of the question; but, in the mean time, it remains the chief exposition of the English law where insanity is pleaded as excuse for crime. If insanity is generally understood—*non compos mentis* as we may define it (we admit the difficulty)—as being a deviation from the normal mental state, characterized by a belief in something which has no existence, apart from the morbid imagination of the individual, may I not assume under this standard are included a large number of cases of insanity? Under it would pass the wild maniac and the idiot, whose comprehension does not realize the nature and quality of their actions, while the feeble in mind, who cannot see beforehand the consequences of his acts, and the delusionist, when these are of such a sort as would justify homicide, were they the doctrine held by a man perfectly sane. But it is obvious that this decision excludes a number of cases in contradistinction where legal irresponsibility exists, and it is defective in making the test of insanity on cognition or on intellectual condition, while it disregards conditions of the emotions and will, which are always more powerful on conduct than intellectual conditions, and which are always the greater number in insanity. Sir J. Chrichton Browne (*Lancet*, No. 4, vol. ii., 1888) has ably proved to us that attempts have been made to show that the statements of the law as laid down are not meant to be explanatory, but that it was so, he says, must be deduced from a study of authorities, and one of the highest of these, who had written lately on the subject,—Lord Bramwell,—has put the matter tersely thus: "The question, therefore, should be, not whether the person accused of a crime is mad, but whether he understood the law's threat. Whom ought the law to punish?" Lord Bramwell asks. "All whom it threatens on conviction. Whom ought it to threaten on conviction? All who would be influenced by the threat, all whom it would or might deter or help to deter." The law, as it stands, is, according to him, "right to demonstration," and he would unhesitatingly punish with enhanced severity, if need be, all insane persons committing crime, and capable of understanding the law's threat. The woman laboring under melancholia, believing herself doomed to die, and killing her child at the command of a supernatural voice, and the monomaniac, who, imagining that he has been robbed of his reputation, and assailed by electricity and mesmerism, kills one of his supposed persecutors, ought both, according to Lord Bramwell, to be executed.

It will be worth while to examine Lord Bramwell's position with some minuteness, for it lies at the very core of our subject, and in doing so we would, in the first place, submit that he answers the very point at issue between members of the medical and legal professions when he takes for granted that in the morbid mind will-power is coextensive with knowledge. All who do not understand the law's threats he would exempt from punishment; all who do understand it, he would punish, because, in his view, all who thus understand have the power of refraining from the act for which punishment is threatened. Now, it will become apparent, as we go further with our subject, that this is not sound doctrine; that there are lunatics who

are as powerless to refrain from acts which they well know will be followed by punishment as epileptics to refrain from fits which they well know will place them in great jeopardy.

But, in the mean time, we venture to criticise Lord Bramwell's whole theory of punishment, which appears to us of too narrow limits. What is the true theory of punishment? Why do we inflict pains and penalties upon those who do wrong? Simply, he would reply, to deter others from falling into similar evil courses. The power of deterrence is, in his estimation, the sole motive underlying punishment. The reformation of the criminal he would, perhaps, regard as a secondary consideration, which, following the theory, ought to be classed under deterrence, for to reform a criminal is simply to deter him by punishment from repeating his offences. But this deterrent theory of punishment has never satisfied mankind. If it were legitimately carried out it might lead to punishments of impressive severity, perhaps to torture, or to a similar conclusion, as realized in the "Laws of Dracon," which made death the punishment of every crime; or, on the other hand, to the abandonment of punishment altogether whenever it failed in averting crime; or, still again, to the punishment of persons known to be innocent, for the sake of example, when a great crime had been perpetrated or when crime was prevalent. The fact is, that it is impossible to eliminate from our penal institution an element of moral reprobation. There is in us an organic cohesion between the idea of transgression and the idea of penalty, an intuitive belief in a *vis judicatrix naturæ*, which metes out punishment to law-breakers, redress of grievances, readjusts a balance that has been disturbed, and subserves the criminal under that law of force which he has himself asserted. When a child burns its fingers by placing them in the flame of a candle, the sharp pain experienced deters from a repetition of the experiment, but it would be a very special teleology that would maintain that the whole object of combustion was deterrence from burning; and so, I think, it is but a narrow philosophy that recognizes in punishment nothing deeper and under than a practical significance. Granting, for the sake of argument, that the theory before referred to is correct, then we maintain that Lord Bramwell makes several assumptions in his application of it to lunatics that cannot, I think, be justified. "Punish," he says, "all whom the threat of punishment might or would deter; and punish madmen," he goes on, "because they are deterred by the threat of punishment, not, perhaps, as often as sane people, but still sufficiently often to make it worth while to punish them. The answer to this seems to us to be that by punishing madmen one cannot hope in any appreciable degree to increase the deterrent influences which already operate upon them. Not one lunatic in twenty realizes that he is insane, and thus the vast majority of lunatics are already deterred from crime by the fear of punishment, as much as it is possible for them to be." The medical profession differ from Lord Bramwell in his application of the principle he propounds. We are prepared to admit that amenability to threats is in a sense the true test of responsibility, but we cannot allow that the understanding of the threat is any criterion of amenability to it, or that the boundaries of responsibility, as dictated by Lord Bramwell, correspond with those which professional experience delineates. The lunatic who can respect a threat has a free will, while the lunatic upon whom a threat has no influence is under the thraldom of disease. That is the real practical question at issue in every case in which the defence of insanity is set up. Was the lunatic free to choose or under the duress of disease? Was his will capable or inept? But Lord Bramwell, and those who think with him, argue that it is sufficiently proved that the lunatic could help it, if he knew the nature of his act,—viz., that it was killing; the quality of his act,—viz., that it was a crime, and also it was wrong in the sense of being forbidden by law. Whereas, medical men, almost without exception, maintain that a lunatic may be able to know and express the nature and quality of an act and its wrongness, and at the same time be as unable to resist doing it as, for instance, to abstain from jumping under a smart electric shock. The knowledge of the nature and quality of an act and its wrongness is not, in the regions of pathology, any measure of will-power; and not only medical men but judges have perceived this.

The late Lord Chief-Justice Cockburn, one of the greatest authorities of his time, said, "The power of self-control, when destroyed or suspended by mental disease, becomes, I think, an essential element in the question of responsibility." And Mr. Justice Stephens has expressed the opinion that the law of England ought to require no act to be a

crime, "if the person committing such crime be, at the time of commission, prevented, by defective mental power or by any disease afflicting his mind, from controlling his own conduct, unless the absence of the power of self-control has been produced by his own default."

It needs no apology from us for quoting at length such weighty words from our former teacher, one who has attained the foremost rank as a psychologist. It is satisfactory to see so sound a lawyer as Mr. Clark Bell (president of the Medico-Legal Society of New York) so vigorously combat Lord Bramwell's dogmatic utterances, "because the insane in asylums can be influenced by threats in the control of their conduct, they are under the law's threats, and therefore responsible," as follows: "I concede that they are constantly so influenced; but where does this lead to? Not necessarily to responsibility. Would Baron Bramwell say that, under the law of England, an incurable lunatic, an inmate of an asylum, should be hung for the homicide of a keeper, physician, or even another inmate? Has such a thing happened? Can it occur again? Yet the law threatens him, he knows right from wrong, and knows he is doing wrong, and he is influenced by and is under the threat of the law, if Baron Bramwell's theory is correct. It is a question of degree, this power of the will. A homicidal or suicidal lunatic, threatened with a strait-jacket by his keeper, or with hyoscyamus by a physician, might be able to abstain from a given line of forbidden conduct in an asylum, and yet be wholly unable to resist killing another in the one case, or himself in the other, if the watch upon him was intermitted an instant. The ability to comprehend the law's threat must be considered in connection with, and in relation to, the will-power of the lunatic to resist or overcome the impulse or delusion. Does the delusion dominate the will? could he help it? should be the question. The loss of mental inhibitory power, or loss of self-control, may be momentary in duration or it may be constant. Most persons are visited occasionally by odd thoughts. How many of us are duller in the morning and more lively in the evening, or who are duller in the winter than summer, or the reverse, or who are more irritable at stated intervals, or who are subject at divers times to 'moods, tempers, and fancies?' Are there not hundreds of people whose mental life is one long interchange of impulse, or its reaction, activity, and dulness, by a natural law of their structure? We must always regard human action as the outcome of action within the body, stimulated by present surroundings, or by those that acted upon the individual's ancestors. They present to us the fascinating picture we see shown to us in the working of a steam-engine. How its initial movement, so weak at its commencement, amplifies and increases continually, in proportion as the volume and power of the mechanical appliances placed at its disposal become more considerable and more powerful."

Damasippus and Horace held that all men are mad,—*insanus et tu, stultique prope omnes*. Dr. Ball, without going quite so far as this, states "that the number of persons perfectly stable on all points throughout the entire period of their existence form but a minority of mankind." "The world abounds with people," he tells us, "whom a strict scientific diagnosis would condemn as mad, or more or less touched," yet at no time in their life would it be permissible to put them under restraint. Such people are to be seen occupying, honorably and successfully, every position in life and society. We brush against them when we take our walks abroad, we see them in the mirror which reflects ourselves. On the other hand, insane tendencies are often hidden with great skill, and are for a time consistent with great intelligence, while the ordinary duties of life are discharged in a way which does not excite mistrust, yet the accompanying state of mind and the final sequence of mental disorder do not fail eventually to produce conditions leading to disclosure. Men holding exalted positions, subject of overwhelming impulses of a cognate sort, have discharged their duties for lengthened periods, while conscious of an almost overpowering influence. The recognition in lucid intervals of these impulses and delusions fills the patient with horror and remorse, and often forces an avowal to the patient's physician or friend. Dr. Forbes Winslow says, "Homicidal lunatics are cunning, deceptive, plausible, and, on the surface, to all outward appearances, sane; but there is contained within their innermost nature a lurking after blood, which, though at times latent, will develop when the opportunity arises. This impairment of the will is, as a general rule, found in those predisposed hereditarily to the neuroses, or in those whose brain-functions have been damaged by an injury to the head, perhaps slight and

neglected at the time, by overindulgence in alcohol or other excesses. They are always present, in greater or less quantity, in insanity. In every case the higher centres are involved; there is enfeebleness of their functions, the lower centres become more excitable whenever the centres of volitional inhibition are weakened, or whenever their influence is temporarily in abeyance; the centres beneath them respond excessively to peripheral impressions, and, when the power of the brain is upset, we have to deplore the loss of self-control, and we have overactivity expressed by delusions and extravagant actions. Are not the first signs of insanity often but the outward expression of features of thought and feeling, which, in normal health, is held *in laissi*, but which break loose, owing to loss of inhibition. No better illustration of sudden and complete overthrow of will-power could be advanced than the far Eastern Malay we read about in the newspapers a few months ago, who, having received a shock from the death of his daughter, sprung to his feet, started off, and stabbed the first eleven people whom he met in the street with his knife.

We do not say that all criminal acts are to be looked upon as mere brain defects. One means of preventing the terrible tragedies which ever and anon startle our domestic lives, is to endeavor to find out in early life the make, constitution, and tendencies of children, especially those whose inherited conditions or brain state, as induced by circumstances, are exceptionally difficult to control: we should take care, as they grow up, not to place them in positions for which they are obviously unfit, nor must we forget that much can be done, by training and discipline, to correct defects and improve conduct and character, nor that exceptional criminals, like geniuses of high talent, are bred by inheritance, training, and social surroundings. The children of those fallen in crime grow up surrounded by an utter absence of virtue, and all their bad tendencies are accentuated by the absence of the conditions of wholesome life.

Clouston says, "In relation to the medico-psychological problems of mental inhibition and impulse, we have to take into account those obscure human tendencies towards killing, towards destructiveness, towards appropriation, towards unrule, some of which exist as incognate psychological tendencies more or less strong in most human beings, and the gratifying of which gives pleasure. They are best seen in youth, and they often come out in disease. Be they transmitted qualities of our far-off progenitors, or physiological weapons to help us in the struggle for existence, or other or normal physiological energies transmitted, there they are, and we must accept them as facts of nature. The forms of insanity in which crime is usually committed are mania, epileptic, impulsive, and alcoholic insanity, and generally, like suicides, in the incipient stage."

Maudsley and others have written of cases of impulsive insanity in which murder was the common tendency; but, as a rule, in these there was a special antipathy, the insane correlative of love,—the tendency of the loving husband to kill his wife, or the doting mother to destroy her offspring. There are many intricate cases on the border-land of disease,—cases of mild enfeeblement of mind, the voluntary taking of drink, where we have crime committed in delirium or short frenzy. In forming an opinion in these cases, we must weigh the circumstances of the case carefully, in the spirit of the words of Lord Hale, lest, on the one side, there be a kind of inhumanity towards the defects of human nature, or, on the other side, too great an indulgence given to great crimes, avoiding always, in the interest of science, becoming a partisan. The case at the heading of my paper is but a typical one. He had no known insane delusions, he could reason well, he was ever affectionate, doting on his darling child, he was the reverse of cruel, he had no motive for killing his child, he managed to carry on his professional work in a country practice, and yet he kills his child by a shot from a small revolver he had habitually in his pocket, and then, in a moment of remorse—and it is not denied that the subjects of insanity feel this—attempts his own life.

Let us ask ourselves, Are not these conditions connected with an original hereditary tendency to mental disease, as shown by other members of his family? From his youth upward he has been odd and eccentric. In middle life, shown by extraordinary acts and conduct, false views concerning those nearest and dearest to him, as shown by a letter to his wife, written on the day of the crime. Is this condition not associated with a brain injured by constant indulgence in alcohol, and exhausted by the running down of his vital power by the disease from which he was still suffering? What room is there to doubt that the man at the moment he shot his child was in a state of

defective inhibition, manifested not by delusions and similar symptoms, but by an act of violence, driven by blind, uncontrollable, and morbid impulse, whereby the will and the reason were for the moment overpowered. Is it not a fact that the impulse may be satisfied and exploded by the act? It may be as sudden as an epileptic fit, and may, like the latter, bring relief to the brain. Indeed, there is a strong connection, as well as analogy, between the two disorders; and, as Dr. Maudsley says, "instead of a convulsive movement, there is a convulsive idea." The doctrine of ungovernable homicidal impulse has been used to cloak real murderers. Of this there is little doubt. But our duty as medical jurists is not only to consider the act itself and the manner of its performance, but we must also closely sift the past history of the perpetrator and his progenitors,—to carefully weigh the evidence in every case, and to look diligently for other causes or symptoms of nervous and mental disease with which it may be associated. Let us always keep in mind that a morbid neurosis is not the less certainly hereditary because it shows itself under different forms in different generations. One generation may exhibit epilepsy or alcoholism, while the next displays well-developed insanity, while it will be generally found that the near relatives of the insane exhibit varying degrees of nervous instability.

One of our judges (Sir J. F. Stephens) puts it, "That generally medical men can only say that A did in fact labor under a particular disease, with the nature of which they are very imperfectly acquainted, but how that disease may have been related to any particular action of A's, in most instances, they cannot tell at all." While another judge ruled "that the question of a prisoner's insanity was one for the jury, and not for the medical witnesses."

It cannot be denied that there was a time when the functions of the brain were unknown, when insanity was elucidated by metaphysics, and then, perhaps, a case of insanity might have been as well determined by a jury of tradesmen as by physicians of a century ago. But, thanks to Ferrier, Bastian, and Jackson, herein has been worked a change, the limit of which has not yet been reached. Already a ray of light has broken in upon the legal minds of our judges in America. Judge Montgomery, of the District of Columbia, in charging a jury, said that if a prisoner, who was indicted for murder, "was mentally afflicted, so that he did not know right from wrong, as applied to the act, or, if he did know, but by reason of the duress, the stress of his mental disease (if he had any), he had no power to choose, no power to avoid doing what he did, and if the homicide was the product of his mental condition solely, or if by reason of the insane delusions which he had been harboring (if any) he had reached that condition of mind where the morbid impulse to kill became irresistible, and existed in such violence as to subjugate his intellect, control his will, and render it impossible for him to do otherwise than to yield and do as he did, then he was not to be held accountable."

Judge Somerville, of Alabama, has departed from the beaten track by questioning whether there may not be "an insane person who, while capable of perceiving the difference between right and wrong, is, as a matter of fact, so far under the duress of a diseased brain that the power to choose between right and wrong is destroyed, and that in such a case, although he perceived a difference, was not criminally responsible for an act done under the influence of such controlling disease."

Since the above was written an important legal decision has been given by Baron Pollock, who has the reputation of being the most humane judge on the bench. At the Leeds autumn assizes, December 14, 1888, G. M., aged 34, was indicted for the wilful murder of his mother on October 11, 1888. The crime was remarkable in several ways. There was the relationship between the prisoner and the deceased woman, and then there was the fact that the whole of the crime was witnessed by a domestic servant in her employ. The prisoner lived with his mother at a village inn. After the closing of the house at night, he came into his mother's sitting-room about eleven o'clock and locked the door, putting the key in his pocket. The mother and servant ultimately lay down on the sofa, each taking an end. The accused then went to a cupboard and took out a pistol, which he proceeded to load with powder and shot. Until about half-past seven the following morning he held the pistol in his right hand. That fact afforded a reason why the servant was unable to raise an alarm, the prisoner threatening to shoot her if she made a noise. He became very wild and excited, pulled his mother off the sofa, demanded and obtained what money she had, and threw her on the floor. He then commenced kicking her, and for four hours continued to do

so. After she was dead he still continued kicking her. He then tore the whole of the clothing off the body, protesting all the time that it was not his mother. Witnesses were called to prove that, up to the afternoon of the day of the murder, prisoner appeared to be in his proper state of mind. When arrested and charged, he said, "This has all been brought about through being too fond of money lately; but I did not think she was my mother." He had been engaged to be married, and his mother had been opposed to the match. During the last twelve months he had been very nervous and excited after drinking, and had fancied that there were persons in the house when there was nobody there. Five years ago prisoner was attended by the family doctor for delirium tremens, and who gave evidence that the mother was a nervous and timid woman, of feeble intellect, and suffered from general depression, and was under the impression that some one was always watching the house; while an uncle of the prisoner committed suicide while in a temporary state of insanity, and that his aunt was confined in a lunatic asylum. A month after the murder, the accused was examined by a specialist, at the request of the treasury, and who gave evidence that the prisoner was suffering from *mania à potu* with homicidal delusions. His lordship, in charging the jury, pointed out, according to the law of England, which has been laid down for centuries, that no man can reduce himself to the condition of a brute beast, and then claim exemption from the ordinary laws of the land, or the duties he owes to his fellow-creatures, by saying, "I did this act, but at the time I did it I was in a state of absolute want of reason, produced by drinking." So, if this case rested on this point, there would be no defence whatever; but it is admitted that, on the 16th October his mind and body were not like those of other men. It may have been that the great portion of the infirmity from which he suffered was occasioned by hereditary influences transmitted to him by those who had gone before him. Therefore I say that this man's infirmity, his deterioration of mind, arose from that cause to a very great extent, and it may be that his infirmity and deterioration of mind in itself might have accounted, and possibly did account, for the crime which he committed on the occasion when he killed his mother. If so, then, of course, there steps in another rule of law, which is but the common humanity of the laws of all nations, "that no man should be held liable in a criminal court for conduct however wicked, wrong, or contrary to morality or the laws of his country, when it is done by a person who is not in possession of his right mind, and whose mind cannot govern him as to what is right and what is wrong." The strongest forms of all the sorts of insanity which is excused by the law is the insanity which, beyond all doubt, establishes that in the mind of the man who commits a crime there is a delusion. Another question arises in the case. It is said, "Here is a man who, it is granted, has some tendency not merely to insanity, but to insanity of a peculiar form, known as homicidal mania, which is identical with suicidal mania; that such persons have impulses under which they lose control of themselves, and therefore they are not responsible to the law. It is said that this man never would have done this act if he had been a temperate and careful man, and that, had he abstained from alcoholic drinks, he might have gone on living at peace with his neighbors for years. He might. But then he takes a certain amount of alcohol, and that, added to his predisposing condition, makes him a man who commits murder. It may be said that, if a man has an infirmity which prevents his taking alcoholic liquor, the rules against an ordinary man taking liquor are more applicable to him, because he ought not to take a little drop if it upsets his reason. We get here rather a fine question. In the first place, it may be a sound, moral argument that a man should know his own condition, and that he may be told it beforehand; but, as we have often heard in courts of justice, the last man to know his own infirmity is the wretched creature himself who is the subject of this infirmity,—the infirmity of a weak mind. He cannot argue as doctors argue for him. He goes about the world believing that he is on a level with other people who are around him. Therefore I should have no hesitation in telling you that if you think the evidence in this case points to this, that although the man had been more or less of a drunkard for the last two or three years, and had delirium tremens, if at the time he committed this act he had not made himself drunk by an excess of liquor, but had taken that amount which an ordinary man might take without injuring himself, but that the real cause of this terrible event was his brain being upset by a predisposing cause,—although a contributory cause was the taking of this small amount of liquor,—I should then direct you that it would be your duty to

say that he is guilty of the crime in fact, but that he is excused from the effect of that crime by reason of his insanity at the time." The jury agreed that at the time of the commission of this offence charged the prisoner was insane. It would almost seem that his lordship early in his charge had abandoned the existing legal test,—the knowledge of right and wrong,—but later returned to it. The greater or less amount of drink taken by the prisoner before the committal of the crime, as bearing on the question of responsibility, is a matter, perhaps, opening the way to innumerable difficulties.

Again, in a later case, Regina *vs.* Hey, Baron Pollock said, "Every person is responsible for the consequences of his own act. If, however, he has no knowledge of what is right or wrong, or afflicted with insanity, he may be guilty of the act, but not guilty to the law as if he were a sane man." It behooves us, therefore, to use all our endeavors to persuade the legal mind of the necessity of reform in this important matter, and thus to compel the legislature to substitute proved scientific data for the existing legal test of criminal responsibility,—"the knowledge of right and wrong, or the nature and consequences of a criminal act," the so-called "common sense" test of insanity, as adopted by Lord Bramwell and others,—and to point out the necessity of appointing expert psychologists as assistants to the judges, whose duty would include the examination of the accused as soon after the crime as possible, as a step in the right direction, to set at rest a subject full of interest to every citizen, pregnant with the rights and destiny of the insane, and to put an end to the contests in courts of law on questions of responsibility and disease, as now determined by the provisions of many of the forty legal enactments relating to the insane which find a place in the statute-book of our country.

AN OBSCURE DISEASE.

By John A. Lanigan, M.D., Hyde Park, Mass.

WHETHER that which I am about to describe ought to be considered a disease in itself, or merely a symptom of a disease latent in the system of certain individuals, I am not prepared to say, but I certainly cannot avoid noticing the fact that this state is so predominant as to obscure any or all other symptoms, if, indeed, such exist. The state which I refer to is what may be called the inebriation of sudden joy. It will be seen, however, hereafter, that this inebriation may arise from other causes than joy; anger, for instance, may bring about the same result.

If my readers will kindly allow me to speculate a little, I will venture the suggestion that the seat of such disorder may be situated in the spleen, but, as the function of the spleen is not as yet known, this opinion must of necessity be only presumptive and somewhat hazardous.

It would be well, however, before going any further into the subject, to state exactly what I mean by the inebriation of sudden joy. Well, briefly, I will say that I have known and read of many persons who have been thrown into a stupid state of intoxication from sudden joy or anger. That is to say, the joy was the *apparent* cause; but it may have been merely the exciting cause that awakened some deep-seated and obscure malady. However, although I have studied the subject for years, I am not yet in a position to speak with certainty.

I will here recount some of the many instances of this disease that I have read of, and afterwards I will describe the instances that have come under my personal observation.

A prominent military man, who had drunk moderately during the war, and had abstained from that time on, while attending a dinner (some twenty years afterwards) with some of his old comrades, suddenly became hilarious, made a foolish speech, and settled back in his chair in a drunken state, and was finally taken home quite stupid. He had not drunk any spirits, and had only used coffee and water, and yet he had all the symptoms of alcoholic intoxication. His case, it is believed, was due to a contagion (malaria) which he had contracted long ago, when in the army.

Another case was that of a man who had been an inebriate years ago, but had reformed, says the *Popular Science Monthly*. He was recently elected to office, and gave a dinner to some friends. Among them was a physician who has been greatly interested in these studies. He sent me a long report, the substance of which was this: On the occasion referred to many of the company became partially intoxicated, and the host, who drank nothing but water, became hilarious, and finally stupid, with them. He was put to bed with every sign of intoxication, but recovered, and next morning had only a confused notion of these events.

The third case occurred four years ago. A reformed man, of twelve years' sobriety, went on a military excursion with a drinking company, and, although he drank nothing but lemonade, became as much intoxicated as the others. This event was the subject of much comment and loss to him, socially and otherwise, although he protested, and others confirmed his statements, that he did not take any spirits at this time.

So much for some of the cases that I have read of; now with regard to those I have personally known.

A certain lady who had never taken more than an occasional glass of wine, and that very rarely, about six weeks after confinement invited a number of guests to the "christening." Although wine was partaken of by many of those present, the lady in question refrained from so doing, but became after a while "exceedingly jolly," talked at random about many things decidedly irrelevant, and at last went (or was brought) upstairs in a stupid condition and put to bed. The lady was sick for several days after, during which time she appeared exceedingly nervous, and her mind seemed or was in a confused state. This case puzzled me not a little to diagnose, and, although I had my suspicions that there was some underlying malady, I put it down as a bilious attack. The lady's eyes had all the appearance of one who is recovering from a spree, and, indeed, if I had not known positively all the circumstances, I might have been led into that error.

Another case is that of a gentleman who seldom, if ever, tasted liquor. His salary had been, on account of his abilities, suddenly raised one thousand dollars a year. As soon as he received the news he came to my office in an overjoyous state, his eyes fairly "dancing" in his head, to inform me of his good luck. We conversed a while over the subject, and suddenly he arose and went back to his place of business to complete some correspondence that he had left unfinished. About half an hour after I was called suddenly to attend him. I found him unconscious or stupid, and could get nothing out of him. I was informed by the other clerks that he came in and sat down to work in his accustomed manner, when suddenly one of them noticed he was fast asleep and could not be aroused; his face was pale, and they became alarmed and sent for me. The gentleman had taken no liquor, and yet he exhibited all the manifestations of one who had been on a spree. At one time he would be very despondent, and say he knew he would be discharged; at another he would attempt to sing. Again, he would start to praying, and insisted he was dying, and wanted his clergyman sent for immediately. In about a week he was all right again and at work enjoying his augmented salary.

I could enumerate over twenty similar cases, if time and space would permit; but I think I have said enough to prove that there may be other sources of intoxication besides alcoholic stimulation.

In the many instances of this disease which it has been my fortune to witness, I have noticed the following train of conditions in the individual, which, I can most positively affirm, are similar in each succeeding attack, and almost identical in every separate case.

The first stage is preceded by a period of despondency or depression of spirits, of longer or shorter duration, at which time the mind becomes more than ordinarily acute; then, under the stimulus of some excitement,—joy, or, in some instances, anger,—the individual becomes somewhat hilarious or excited (according to the immediate cause), says and does silly things, and eventually becomes totally unconscious, from which state he awakes tremulous and nervous, and entirely ignorant of what has transpired from a certain time, but *perfectly* cognizant of every turn, look, act, and word, even, that he may have said or done previous to that time. I dwell upon this point because I look upon it as somewhat diagnostic. That a man should be able to give a strict and detailed account of all his words and actions, and even many of his thoughts, together with a full record of his conversations with other individuals, in almost the exact words, and then suddenly all to become a dead blank to him in a few minutes, indicates a state of the system little, as yet, understood.

After this period is what might be called the second stage of the disease. There is, as a rule, a loathing of food, owing, perhaps, to a disordered stomach, for the brain and stomach are so sympathetic with the diseases of each other that one cannot be affected in any marked degree without likewise affecting the other. Then there is a period of depression of spirits, alternating with drowsiness, which, in its turn, is succeeded by flashes of brilliancy of mind, during which time the patient appears to be all right, only a little *nervous*.

The third stage is a period of wakefulness, during which time the patient is *exceedingly*

nervous and imaginative, hates to be alone, during the night especially. Perfectly sane, however, on all ordinary topics; quiet but restless. Here the attack generally ends by restoration to health, if properly treated and *cared for;* otherwise, in this state, the patient is sometimes, though a good-living man, liable to commit suicide or other rash act.

Now, such is a complete description of the character of the disease (call it what we may), as it has manifested itself in the numerous instances that have come under my observation. And although many of those symptoms are common to inebriates, still I am only speaking here of individuals who have either taken no liquor at all, or have taken so little as not to be worthy of the slightest consideration.

Now, the question arises, Can the sudden change from one state of the mind to another be capable of producing such a chain of events without the individual being in any other way diseased, or must there necessarily be some pre-existing malady in some one of the organs of the body? One thing more I would say, and that is, that the liver appears to be in a torpid condition in some instances and not so in others.

HYSTERO-EPILEPSY IN THE MALE.

By Cheves Berill, M.D., Winfield, Ark.

IN the summer of 1882 I attended a patient that gave me a great deal of trouble, owing to his peculiar condition. Such a thing as hystero-epilepsy at that time, so far as I know, was not well recognized, and this patient manifested symptoms identical to females whom I had treated for that perplexing disorder of the nervous system. Hence I here give the notes of the case as then taken, and if it was not a well-marked case of hystero-epilepsy, I will find it out later on, after the profession has read the report of this case.

H. H., aged 22; of German descent; heavy set; weight, one hundred and sixty to one hundred and sixty-five; fair complexion; blue eyes; auburn hair; appetite good; bowels and kidneys acting well; no predisposing cause for disease.

July 30, 1882.—I was sent for to see him, but, being away, another physician, of considerable experience, was taken down to see him. I saw the physician next day, and he told me that the patient had "had a congestive chill," and that he put him upon quinine in large doses, and that he thought he would get over it all right.

July 31.—I was again sent for. It was about 11 A.M. when I arrived where he was. I found him in a strange condition. He was restless, tossing from side to side. Pulse, 140; respiration, 30 to 35; face flushed; pupils dilated; tongue coated some little. Owing to the somewhat difficult breathing, I employed amyl of nitrite, enough to flush the face considerably. I gave cathartic medicine, as the bowels were costive. After two hours he was resting quietly, breathing freely, and pulse 100. I was puzzled over the case, as I had often treated every form of congestive fever, and always saw high fever following the chill. I left more quinine, to be given during the night.

August 1.—Saw him at 9 A.M. The medicine had moved the bowels freely. Pulse, 80; respiration, 20; had eaten some breakfast; talked as usual; said he was well. But at 12 M., while we were eating dinner, all at once he became speechless, and spine stiffened, hands clinched together, and toes drawn down; legs flexed somewhat; breathing irregular; pulse accelerated. He would whirl over on his side as quick as I ever saw any one and bury his face in the pillow, so we had to pull him over to let him breathe. The pupils were slightly contracted for a while, then widely dilated. The eyelids would open and shut for a while, then they closed, and remained so for some time. The teeth were firmly set, after having been ground together for twenty minutes; the skin felt natural; abdominal muscles tense; head soon began to draw back; spine to curve; then to turn his body from right to left, his feet resting on the bed; some froth came out of the mouth. This state continued for over an hour, and he got quiet, but seemed to be very weary after the contortion. After he got perfectly quiet, I wet my hand in cold water and suddenly applied it to his throat. This caused considerable trouble. He whirled from side to side, and looked at me in a wild manner; pupils widely dilated; fingers again clinched down in the palm of the hand. This passed off in ten or fifteen minutes, and he went to sleep, and slept a short time. By 4 P.M. he was rational, and would talk when spoken to. I was now more in doubt as to what the trouble was than ever. I could not for my life locate the disease. Hydrophobia seemed to me to be the most probable of any disturb-

ance that I knew of. The spasms caused by the wetting of his throat made me have some fears that this was the trouble. I now began to give bromide of potassium in 15-grain doses every six hours. I saw that quinine was of no use. He passed urine freely and in large quantities. He was somewhat reticent during the night, as I was told.

August 2.—I went back to see him early. He seemed cheerful enough. The eyes looked a little wild, tongue clean, respirations about normal, pulse 75 (am sorry that I had no thermometer at that time to keep the temperature). He now could drink water without any difficulty; had some appetite. I thought I had him upon safe grounds, but concluded to stay until evening. I kept close watch over him all the time, to see if I could detect anything of importance. At 11.30 he was again seized with another paroxysm, as on the previous day, only it was more marked in severity, if possible. He this time bit his tongue and lips, hiding his face in the pillow as before. Once the pupils became dilated. The contortions of the body were more violent, head drawn back, heels on the bed when on his back, face flushed somewhat. Pulse, 130; respiration, 35 to 40, deep at times. He groaned and made a growling noise, and tried to bite those of us who were near him, and even his own hands; later, though, the limbs became as before, and, in order to keep him still, it took four strong men, each to a limb. I now used chloroform to quiet him, which promptly did so. After he was from under the influence of the drug, I again dropped water upon him. This caused some little disturbance. He was now very hyperæsthetic; could not endure to be touched without causing some disturbance. He went to sleep, and slept for an hour; on awaking he seemed somewhat delirious, but all this soon passed off, and by 4 P.M. was rational as ever. I now gave the bromide in the same-sized doses every four hours for twelve hours, to try and keep off another such state of affairs: but at 11 P.M. there was another paroxysm. I used the chloroform in the earlier stage of the attack. While I was applying it he caught the handkerchief between his teeth, and threw his head from one side to the other so rapidly that the corners would fairly flap, and he would growl like a dog, gritting his teeth; then he drew his head back, and it took four of us to hold him. I now used the chloroform more freely, which soon quieted him again. He slept for a while, say an hour, and awoke, as before, a little wild. This state of things continued on, in spite of everything that I could do for him, for fifteen days and nights. I had good counsel, but it did no good, as some thought there was but little wrong with him. Some would say one thing and some another; some would have it epilepsy, others hydrophobia, and—to beat all—one old faith-doctor (a woman) came to see him and pronounced him "bewitched." The paroxysms grew lighter. While the lighter spell would be upon him he would keep scratching his penis and scrotum, which was getting somewhat irritated. A deep-colored rash came out on the body from the bromide. There was nothing wrong about his genitalia, as far as I could tell. Later on he would take one of these spells, and try to tear the bedclothing to pieces, and hence had to be held. After a while he would lie down when they began to come on. I was now giving him bromide at the rate of 120 grains during twenty-four hours. The bowels were regular, kidneys acting too free. The urine was clouded somewhat, with considerable albumen in it. By September he was able to go to work again. He finally got well, and went off to his home in Illinois, and has had some little trouble twice since. I could not tell what was the trouble, neither could I locate it, until I saw that Professor Charcot had seen cases of "hystero-epilepsy" in the male. Of course, I may be wrong in my conclusions, but will hold to it until shown different by some neurologist. I would like to hear from some other physician, if he has had such a case.

SANTONINOXIM.

COPPOLA advances the theory (*Repert. de Pharm.*) that the unfavorable symptoms which sometimes follow the administration of santonin arise from an intestinal catarrh produced by the worm, in which there is an exaggerated formation of lactic acid that favors the solution and consequent absorption of the santonin. He recommends, therefore, the substitution of santoninoxim, a crystalline substance that is less absorbable and nontoxic, and which he has found to be equally active when administered in double or triple doses. This santoninoxim is a compound obtained through the action of hydroxylamine upon santonin in an alkaline liquid.—*Druggists' Circular*, August, 1889.

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Leading Articles.

PREVENTION AND CURE OF POSTERIOR DISPLACEMENTS OF THE UTERUS DURING THE PUERPERIUM.

THE practical results of modern midwifery are as apparent as they are substantial. Given the control of all the conditions in the concrete case of labor, and the accoucheur no longer has cause to fear infection of the genital tract. Infection of the nipples and mammary abscess are likewise preventable disorders, while ophthalmia of the new-born merely implies neglect of Credé's methods of prophylaxis.

It is true that women continue to die of child-bed fever and to become lifelong invalids from septic infection of the pelvic peritoneum and connective tissue. Fissured nipples and gathered breasts are by no means uncommon, and sore-eyed babies crowd our dispensaries. These painful facts, however, do not invalidate the universal application of the proposition that the diseases named are now examples of sins of omission or of commission upon the part of attendants or patient. For they find adequate explanation upon the one hand in the equally painful fact that the doctrine of obstetrical antisepsis has not yet passed into the *succum et sanguinem* of every practitioner and nurse in the land. Upon the other hand, the parturient woman herself is often at fault, although seldom in equal degree. At the same time that she may be densely ignorant and superstitious, she may also be very poor. Unhappily, in her case, there applies the principle, *point d'argent, point de Suisse*. Accordingly, it is Utopian to plan the absolute stamping out of puerperal disease, so long as it is impossible to eliminate these potential factors. So far as concerns the control of the two conditions mentioned, we live not in "the republic of Plato, but in the dregs of Romulus."

These splendid achievements are cause for congratulation, while at the same time they give assurance of the coming of more of like kind. For the practice of midwifery is still imperfect. There remain failures of nature and errors of art that, on the one hand, must be supplied, on the other prevented or modified. It is the purpose of this note to discuss briefly one of these *opprobia* of our art, posterior displacements of the uterus during the lying-in period.

Retroversion and retroflexion are occasionally observed in unmarried or sterile women, commonly as the expression of congenital vice, acquired disease, as metritis, new growths, and the like, or as the result of violence. As a rule, however, such displacements are found in women that have conceived, and date from some one of their miscarriages or confinements.

The time when these displacements are determined, according to our observation, is not after the puerperium, but during the normal period of involution,—that is, during the six or eight weeks following the evacuation of the uterus. In the majority of cases the change in position is manifest as early as the fourteenth day. The later limit is indeterminate for obvious reasons. However, in the cases under our observation, no primary posterior displacement has occurred after the expiration of the eighth week of a normal puerperium. But it is evident that secondary changes of position, due to impairment of the integrity of the pelvic floor, violence, and the like, may take place at a still later period.

Posterior displacements during the period of involution are, as a rule, original and not secondary changes in position. Emmet has pointed out the distinction between "original" and "secondary" versions; the former

class includes displacements, due chiefly to conditions inherent in the uterus itself; the latter, those due chiefly to conditions of the neighboring parts. The immediate causation of these displacements varies within wide limits. In the first line, it is necessary to mention the predisposition conferred by the presence of the anomaly before conception. Although pregnancy can be used to effect the cure of many posterior displacements, as pointed out by Pajot and others, yet no one will gainsay this proposition. The force of gravity is operative, especially when the woman lies flat on her back, with the enlarged, top-heavy womb in unstable equilibrium. This factor is of import, especially during the second week, when the uterus, weighing more than three-quarters of a pound, is still small enough to pass below the sacral promontory. Atony of the uterine musculature, round and retro-uterine ligaments, plays a significant *rôle*, since it passively aids the operation of gravity by causing the uterus to assume and persist in a semi-cadaveric position. The true cadaveric position of the post-partum uterus, as shown in Schroeder's plane frozen section, is one of retroflexion, the corpus reclining upon the lumbar vertebræ, while the recto-uterine *cul-de-sac* is free from intestines.

Goodell is of the opinion that stasis of blood in the posterior uterine wall—the consequence of inadequate retraction—is a very common cause of posterior displacements. The distended bladder tends to tilt the fundus backward, while the rectum stuffed with fæces pushes the cervix forward towards the symphysis. Retention of urine and constipation are conditions that are almost always present even in normal puerperæ. The obstetrical binder and uterine compress is once in a while productive of harm, although its omnipotent influence for evil, insisted upon particularly by Thomas, is an exaggeration. As commonly used, like a loose surcingle, the binder is without effect for good or ill. When tight enough to constrict the abdomen, especially when applied over a compress, its causal moment is not inconsiderable. Finally, there remain numerous accidental factors that may determine the displacement. Many of these accidental factors act through sudden variations of intra-abdominal tension.

Very much can be accomplished in the prevention of backward displacements during the puerperium; still more in their permanent reduction. The prophylaxis consists in the elimination of the causal factors, already mentioned, when possible, or in their favorable modification, when their operation cannot be rendered null. The first and most important step is to secure and maintain normal retraction of the uterine musculature after labor and during the early days of the lying-in period. The fulfilment of this indication implies proper conduct of the third stage of labor, and the control of the uterus for at least one hour after parturition. The cavum uteri will thus be completely evacuated, the walls will possess their normal tonus, and the entire organ will be placed in the most favorable state for rapid involution. The Vienna plan of gentle friction of the fundus every twelve hours for the first two days maintains retraction, while it does not interfere with the process of puerperal thrombosis. The same plan has been adopted in the Rotunda by the President of the British Gynæcological Society. This practice, which in Dublin has been dubbed "Schultzeing" the uterus, is far more effective than the use of ergot, strychnine, or quinine.

The bladder must be emptied at regular intervals,—say three or four times a day,—from the beginning until the end of the lying-in period. The catheter may usually be dispensed with, if the woman be taught to urinate in the horizontal position before her confinement. The canonical laxative on the third day and the subsequent daily evacuation of the sigmoid flexure and rectum are items that demand scrupulous attention.

Posture of the woman in bed is of moment, especially during the second week, when the greatest diminution in the size of the womb occurs. During this period the puerpera ought to lie on either side, and avoid as much as possible the protracted dorsal decubitus. At the end of the first fortnight, in normal cases, the woman may be permitted to get up. The minimal length of time that the puerpera should remain in bed is no longer a question for discussion. Goodell, indeed, advises a briefer period, as the "conclusion of a long and well-sifted experience." But in reaching this conclusion, he has, doubtless, been influenced by a custom of the Greeks and Romans, among whom it was the rule for the woman to take a bath on the fifth day. This brilliant writer also cites the play of Plautus, entitled "Truculentus, or the Churl," in which a woman receives her lover on the fifth day. But a squaw can do the same thing, and in Southern Illinois female tramps cherish a like tradition. Physiology and the universal experience of mankind, however, teach us that these experiments are hazardous. The size,

form, and position of the uterus ought always to be ascertained by careful bi-manual palpation before the woman is permitted to leave her bed. In the event of a posterior displacement, now, if ever, is the time for its correction. Reduction is commonly very easy, and the organ can be permanently secured in the majority of cases by the use of a suitable pessary. Sometimes the systematic employment of the genu-pectoral posture, with the admission of air into the vagina, suffices. In this class of cases Thure Brandt has scored excellent results by his system of abdominal massage and uterine gymnastics. We speak from personal experience as to the efficacy of the plan of prevention and treatment that we have outlined. During the last five years we have paid particular attention to the subject of this note, and up to the present have encountered no case of posterior displacement that proved unmanageable.

METHYLACETANILIDE, OR EXALGINE.

METHYLACETANILIDE, described as a new analgesic in the THERAPEUTIC GAZETTE for May 15, 1889, page 339, continues to attract considerable attention from continental pharmacologists. Dr. Binet has recently published a number of observations with this substance, which, in the main, confirm the clinical and physiological effects determined by Drs. Dujardin-Beaumetz and Bardet in the Cochin Hospital. Dr. Binet states that it diminishes motor power in all animals, and in this respect is closely analogous in its effects with formanilide and methylformanilide (*Nouveaux Remèdes*, June 8, 1889). It produces local paralysis in the muscles which are the seat of the injection, arrests the heart, diminishes oxyhæmoglobin, and interferes with the oxygenation of the blood. Its antithermic action is quite as marked as that of acetanilide. In mammals its action differs considerably from anilide and methylformanilide. In subcutaneous injections it produces within one or two minutes clonic epileptiform convulsions, with profuse salivation, the attacks of convulsions being separated by periods of relapse, in which there is more or less cyanosis, difficulty of breathing, and agitation. The convulsions so produced, it is stated, may be arrested by inhalations of ether. The convulsions are of cerebral origin, but there is also a certain degree of excitation of the spinal cord. The temperature is rapidly reduced by the injection, the reduction appearing within ten minutes after subcutaneous injection, and attaining its maximum in about three-quarters to an hour later. It generally amounts to 2° or 3° C. with medium doses, but with poisonous doses may amount to 10°. This reduction of temperature, likewise, follows its internal administration, or its use through rectal injection. Small doses produce slight increase of blood-pressure, the pneumogastric nerve preserving its irritability. Death is produced in mammals by interference with oxygenation of the blood, which, after death, is dark prune colored, and shows the presence of abundance of methylhæmoglobin. The urine never contains blood, but preserves its amber color. It does not contain albumen, nor is the special coloration produced by the perchloride of iron. It is said to reduce Fehling's test. The fatal dose for the rat amounts to ⅓ to ½ a grain. For the guinea-pig, ⅓ of a grain for one-fifth pound body-weight. In the rabbit 9 grains have been injected into the vein before death was produced, while in the cat a subcutaneous injection of 4 grains produces serious symptoms of poisoning. As in formanilide, it is stated that animals which have been subjected to this injection acquire a certain degree of immunity to subcutaneous doses, and the quantity given must be larger to produce any effect. The convulsive action is especially reduced by the animal becoming accustomed to the drug, perhaps from the convulsive centre becoming less impressible to its toxic action.

It thus appears that exalgine is a much more active poison than would be suspected from the statements of Beaumetz; while it will further be noticed that Dr. Binet makes no mention of any analgesic effect as following its administration. At all events, exalgine is a substance which should never be given but with the greatest circumspection.

According to M. H. Giraud (*Lyon Médical*, June 23, 1889), the product prepared by Brigonnet, and presented by him under the name of exalgine, has not the constitution which he attributes to it. According to him, the name of "orthomethylacetanilide" should be given to the body described by Beilstein and Kuhlberg under the name "aceto-ortholuidine." Its true designation should be methylacetanilide, and it cannot exist under three modifications, for the radical phenyl contained in its molecule is not substituted. The prefix "ortho" should, therefore, be omitted, for there can be no *meta* and *para* varieties. The methyl group does not substi-

tute one of the hydrogens of the benzol ring, but of the side ring, in which there is only one product possible, when the hydrogens are replaced by certain organic radicals.

In the *American Druggist* for July, 1889, a note is published in which it is stated that methylacetanilide has been experimented with, to some extent, in one of the New York hospitals and has been found to produce partial or entire insensibility to pain, such as that caused by various forms of neuralgia, etc., as had been reported. It has, however, not yet been available in sufficient quantity to make extensive experiments.

Regarding the chemistry of methylacetanilide (first described by Hepp and Hofmann in 1874, *Ber. d. Deutsch. Chem. Ges.*, vol. x. 328, 599), the following explanation will suffice:

When an atom of hydrogen, in the benzol ring C_6H_6, is replaced by amidogen, NH_2, the resulting product is *aniline*, $C_6H_5NH_2$, which, for this reason, is also called *amidobenzol*. If we now imagine *one* of the hydrogens of the group NH_2 to be replaced by a monatomic rest of a fatty acid,—that is, a fatty acid less one molecule of hydroxyl (OH),—we obtain an *anilide*. Acetic acid is $C_2H_4O_2$, or $-C_2H_3O.OH$. When the group C_2H_3O replaces one of the hydrogens in aniline, we obtain the *acetanilide* (known otherwise as antifebrin):

$$\underset{\text{aniline}}{C_6H_5NH_2} + \underset{\text{acetic acid}}{C_2H_3O.OH} = \underset{\text{acetanilide}}{C_6H_5NH(C_2H_3O)} + \underset{\text{water.}}{H_2O}$$

Similarly, if formic acid, CH_2O_2, or CHO.OH, were to enter into combination with aniline to form an anilide, we would obtain *formanilide*:

$$\underset{\text{aniline}}{C_6H_5NH_2} + \underset{\text{formic acid}}{CHO.OH} = \underset{\text{formanilide}}{C_6H_5NH(CHO)} + \underset{\text{water.}}{H_2O}$$

This substance, formanilide, by the way, has recently been found to possess most remarkable properties. Injected into small animals, in doses of ½ grain, it produced complete immobility, insensibility, and apparent death, from which the animal usually recovered after some time.

In the same manner various other anilides are formed. It may be added that the above explanation of the formation of anilides is not the one usually given. For certain reasons, which need not be given here, they are usually regarded as derived from acid amides, by the substitution of C_6H_5 (phenyl) for one of the hydrogens of NH_2. But in the end the result would be the same.

Now, there is still *one* atom of hydrogen left in the series of anilides mentioned above. But this may also be replaced by a monatomic radical, such as CH_3 (methyl), C_2H_5 (ethyl), etc., and thus we obtain compound anilides; for instance:

$C_6H_5N \begin{cases} CH_3 \\ C_2H_3O \end{cases}$ = methylacetanilide (or "exalgine").

$C_6H_5N \begin{cases} C_2H_5 \\ C_2H_3O \end{cases}$ = ethylacetanilide.

$C_6H_5N \begin{cases} CH_3 \\ CHO \end{cases}$ = methylformanilide, etc.

Now, *exalgine* is the first mentioned among the above three compounds. It is prepared by acting upon sodium-acetanilide with iodide of methyl. It appears in needles or long tablet-like crystals, is sparingly soluble in water, readily in hot water, also in dilute alcohol, or in water containing a little alcohol.

AGARIC ACID.

SINCE the recommendation in 1882 by Dr. J. M. Young of the use of agaracine for suppressing perspiration, it has been subjected to numerous chemical investigations. In 1883, E. Jahns, in addition to other substances, separated a body from white agaric (*polyporus officinale*), which proved to be identical with the crystalline agaric acid obtained by Fleury in 1870, and with the agaracine of Schoonbrodt. This body is a dibasic, triatomic acid, homologous to malic acid. Its formula is—

$$C_{14}H_{27}(OH)\overset{COOH}{COOH}.H_2O.$$

Schmieder confirmed these results, and Hofmeister proved that, of the numerous bodies contained in agaric, it was only this agaric acid, or agaracinic acid, which possessed the power of reducing perspiration. In spite of these conclusions, the substances sold in the shops under the names of agaracine or agaric acid are by no means simple bodies. Thus, Hofmeister found that the agaracine of commerce contained agaricol, a substance which was totally inactive, and was to be regarded as a contamination, while the agaric acid contained a mixture of the so-called "red rosin," the probable cause of the

cathartic action of agaric. Pure agaric acid is a white, glistening, light crystalline powder, which, under the microscope, is found to consist of quadrangular tabular crystals, and when recrystallized out of absolute alcohol, forms groups of needles or rosettes. The melting-point is 138° C.

The free acid is only slightly soluble in cold water, but readily soluble in boiling water, and on cooling is redeposited in a crystalline form. All the salts of this acid, in combination with alkalies, are readily soluble, but the combinations with the heavy metals, on the other hand, are insoluble. Hofmeister has recently subjected the pure agaric acid to accurate physiological investigation, and his results are reported in the *Therapeutische Monatshefte* for June, 1889. From the similarity of action of agaric acid and atropine on the sweat secretion, it is of interest to determine as to whether this similarity is restricted to this single point, or whether the parallelism extends to other actions. Of Dr. Hofmeister's results, the following deserve attention from their general interest. In the first place, he found that if agaric acid should perhaps not be included among the list of actively poisonous substances, it was not to be regarded as inert.

Applied locally, marked irritation is produced, which, in subcutaneous injection, produces marked inflammation, extending to suppuration. An internal administration of doses of from 7½ to 15 grains produces vomiting and diarrhœa. In cold-blooded animals it produces gradually increasing paralysis and reduction of activity of the heart. Agaric acid is, however, not capable of antagonizing the action of muscarine,—that is, it will not, like atropine, start the heart of the frog which has been arrested through the action of muscarine. In warm-blooded animals, from the slow absorption, internal administration of the pure acid does not produce any very marked results. In subcutaneous or intravenous injections of the soluble sodium salt, the action is principally exerted on the pneumogastric and vaso-motor centres of the medulla; both centres are at first excited, and then paralyzed. As a consequence, there is at first slowing of the pulse and increase of blood-pressure, followed by fall of the latter. Death follows after convulsions, from arrest of respiration, but in animals in which artificial respiration is maintained, death is not prevented, but is then attributable to great reduction of blood-pressure. Unlike atropine, agaric acid possesses no mydriatic action, but when the sodium salt is instilled into the conjunctiva severe irritation is produced, and, indeed, slight contraction of the pupil results, which may, however, be overcome through the use of atropine. The influence of agaracine on the sweat secretion is not central, but depends upon direct action on the secreting apparatus. Irritation of the sciatic nerve in animals under the influence of agaracine does not produce any secretion of sweat, although pilocarpine is even now active. Therefore, the similarity between atropine and agaric acid is confined to the influence of these two drugs on the sweat-glands. The degree of action is, however, different. Thus, Brobsting estimated that the influence of agaracine on the perspiration is twenty times less than that of atropine, and Hofmeister concludes that even this estimation is still too favorable for the agaric acid.

Hofmeister's investigations would seem to indicate that for therapeutic purposes the pure agaric acid alone should be employed, and that when this substance is given internally there need be no fear of vomiting or diarrhœa. In Professor Kahler's clinic doses of from ¾ to 2 grains were given repeatedly without any symptoms of poisoning, with the exception of transient nausea. Doses of from ⅓ to ½ grain were exceptionally well borne; and since the power of reducing perspiration only occurs after several hours after the administration, and then persists for twenty-four hours, the employment of repeated small doses is greatly to be preferred to the administration of a single large dose. The subcutaneous injection of the soluble sodium salt is to be avoided, as tending to produce severe local irritation. In this connection we may recall to our readers that Dr. Pope, in the THERAPEUTIC GAZETTE for June 15, 1888, noted that doses of ⅛ of a grain in the majority of cases completely controlled the night-sweats of phthisis, even after atropine had failed. Dr. Radcliff also likewise reported in the same number of the GAZETTE several cases of night-sweats which were relieved through the use of this remedy.

MENTHOL IN FURUNCULOSIS OF THE EXTERNAL AUDITORY CANAL.

THE statement of Loewenberg that furunculosis of the external ear is due to the micrococcus, the staphylococcus pyogen-aureus, has been confirmed by a number of

subsequent investigators, and furnishes an important indication for the therapeutics and prophylaxis of this affection. In the treatment of furunculosis of the exterior auditory canal, the principal difficulty which is met with is in the great contraction of the calibre of this canal, due to the swelling produced by the inflammation. As a result of this, applications to the deeper part of the canal are rendered difficult or impossible, and one boil is followed by another as a result of auto-infection. In combating this difficulty, Dr. R. Cholewa (*Therapeutische Monatshefte*, June, 1889) was led to employ menthol,—a remedy which was already known to possess considerable energy in reducing swelling in the nose and commencement of the Eustachian tubes, at the same time possessing marked antiphlogistic and analgesic properties. He states that his experience with the use of this remedy has shown him that pledgets of cotton, moistened with strong solutions of menthol in oil, and introduced into the external auditory canal, rapidly reduce inflammation and swelling in furunculosis of that canal. He claims, however, that its value in this affection is not due solely to the above properties, but especially and above all to its acting as a bactericide. Dr. Cholewa refers to the results obtained by Koch and others, which showed that a menthol solution of 1 to 2000 was capable of destroying cholera bacilli, the bacilli of tuberculosis and diphtheria, and of splenic fever. The author himself undertook a series of experiments, with the assistance of Dr. Rönick, to determine the influence of menthol on the development of the bacilli. Their conclusions would seem to show that weak solutions of menthol, and even the vapor of menthol, are entirely capable of arresting the growth of these micro-organisms. This result, he claims, is sufficient to explain the great value of menthol in this affection. He employs, as already stated, cotton pledgets moistened in twenty per cent. solution of menthol in oil, tightly twisted up and inserted into the external auditory canal. The slight burning produced by this application soon disappears, and pain is rapidly relieved. This application is renewed every twenty-four hours, and is continued until the inflammatory process is cured. If the furuncle has extended so far as abscess-formation, it is opened with a bistoury, and the after-treatment with menthol employed as before. Only a few doses are claimed by the author to be required before entire relief is attained.

THE DIURETIC ACTION OF MILK SUGAR.

At the recent meeting of the French Academy of Medicine, M. Germain Sée presented an interesting note as to the diuretic effects of milk sugar,—a paper which largely goes to explain the diuretic effects attributable to milk, and well recognized by most physicians as one of the best of all diuretics, succeeding when apparently more potent remedies have failed. As long ago as 1879, Moutard-Martin and Richet, from experiments made in Vulpian's laboratory, determined that lactose, saccharose, and glucose all possess considerable diuretic properties. In experiments on curarized dogs, a canula being inserted into the ureter, they found that if a little syrup was injected into the veins, that the rapidity of the flow of urine was increased ten, twenty, or even thirty-fold. These authors likewise confirmed their conclusions by observations made at the sick-bed, and their results there obtained substantiated their strictly experimental observation that lactose was a marked diuretic.

As is well known, milk is a typical food, and fills an important *rôle* in the therapeutics of diseases of the stomach and heart, while it in practice is largely used in diseases where diuretics are indicated, such as dropsy of cardiac or renal origin. Sée attributes this diuretic action to lactose, and he claims that lactose is the most powerful, as well as the most sure, of the diuretics known. He holds that when two quarts of milk are given to a patient, all the advantages of diuresis are obtained, without its inconveniences; while, on the other hand, the glycosuria apt to be produced by a strict milk diet is avoided by the use of lactose. Dr. Sée claims that with the administration of two ounces of milk sugar, diluted in two quarts of water, all other liquids of any kind being suppressed, marked diuresis is obtained in all cases of heart-disease whatever their nature, with the single exception that its action is less constant in arterio-sclerosis. In *La Tribune Médicale* for June 20, 1889, and *La Pratique Médicale* for June 18 and June 25, 1889, Dr. Sée published an account of his experiments in this connection. He states that he has careful notes of twenty-five cases in which the most abundant diuresis was produced by the employment of this method of treatment, the flow of urine immediately falling when the administration of milk sugar was suppressed. He believes that lactose is, therefore, one of the best diuretics, while at the same time absolutely

innocuous, and it is lactose to which milk owes its diuretic properties. The other constituents of milk, especially the water and the salts, have no manifest or useful action, chloride of sodium adding nothing to the diuresis obtained by milk, the sugar and the salts of potassium being little more efficacious. If milk is given in quantities of two quarts, diuresis is produced, but when four quarts are given, a quantity which will contain about six ounces of milk sugar, considerable glycosuria will be developed; while at the same time there will be a marked excretion of urea indicating the destruction of the albuminates. By using the milk sugar alone, however, these inconveniences are avoided. Three ounces of milk sugar, given in the twenty-four hours, will produce an enormous diuresis, more than an equivalent to that which might be obtained with four or five quarts of milk. As much as two or three quarts of urine may be passed daily under the use of this treatment, and under its employment any dropsy present will be almost surely reduced. The degree of diuresis produced by lactose increases up to the third day. It then remains stationary, and then becomes somewhat less for several days; but a short time later, even under the administration of the same amount of milk sugar, the diuresis will again regain its original degree. Dr. Sée claims that while lactose acts as a favorable diuretic in cases of dropsy of cardiac origin, it is not so efficacious in the dropsy of renal affections. In the former class of affections it is claimed that it never fails, unless the kidneys are the seat of Bright's disease, and in which there is a considerable daily elimination of albumen. When the quantity of albumen is small, the result in this affection also may often be favorable. Sometimes the administration of lactose will produce diarrhœa, when naturally the diuresis will be diminished. In other cases, the patients may have been subject to profuse sweating, when likewise the polyuria will be diminished. As a rule, however, it is claimed that the remedy is perfectly supported, and may be given for eight or ten days without interruption, and then suspended for a day or two to have its employment renewed. If the simple solution of milk sugar is badly tolerated, it may be aromatized with brandy or mint, all other liquids being suppressed during its administration. If what Dr. Sée claims is absolutely correct, the advantages of this remedy are very considerable, for it does not confine the patient to any restricted diet, and does not necessitate the prohibition of meat. It would seem that lactose acts directly on the kidneys, since the pulse and blood-pressure remain normal after its use. It, therefore, differs from digitalis, convallaria, and strophanthus, which are diuretics to the extent to which they increase blood-pressure. Dr. Sée would place lactose in the group of pure renal diuretics, in which he likewise locates caffeine and theobromine as remedies which increase the flow of urine without influencing the degree of vascular pressure. Dr. Sée relates numerous cases of dropsy from heart-disease which appear to have been favorably influenced by lactose, even when employed during the stage of imperfect systole. If, however, the asystole is complicated by dyspnœa, lactose is then powerless, though its action may be seconded by the iodide of potassium.

METHYLIC CHLOROFORM AND THE SO-CALLED METHYLENE BICHLORIDE.

THE organic lesions which contraindicate the use of chloroform as an anæsthetic are well recognized, but a certain number of accidents follow its use which are only attributable to individual susceptibilities or peculiarities, which may escape our most careful examination. It has been recently affirmed that *pure* chloroform never kills; but death by syncope may be produced by any anæsthetic, no matter what precautions are taken by the physician. But, aside from these fatal accidents, consequences may occur which are but little less serious; thus vomiting, which may occasion the most dangerous intestinal hernia after laparotomy, or cause the tearing out of stitches after various abdominal operations. This latter class of accidents appear with more justification to be attributable to the impurity of the chloroform, for they gain in frequency when the anæsthetic contains other alcohols than the methylic alcohol. We have already, in the GAZETTE for January 16, 1888, and December 15, 1887, alluded to the use of methylene chloride as an anæsthetic, where we called attention to the preparation employed by Spencer Wells as an anæsthetic in his ovariotomy cases, showing that this was not by any means pure methylene chloride, but was a mixture of one part of methyl alcohol and three or four parts of chloroform. This mixture of chloroform and methylic alcohol was recommended by Drs. Eicholz and Genther as preferable to chloroform, as possessing less toxicity and equal narcotic power, and less dangerous, from the fact that it influ-

ences the circulation and respiration to a less extent than chloroform, a fact which is in support of the generally recognized principle that in the various chlorine compounds the danger is in direct proportion to the percentage of chlorine. M. Polaiilon recently read a memoir before the French Academy of Medicine (*La Pratique Mèdicale*, July 2, 1889), in which he communicated the results of his experiments with methylic chloroform (four volumes of chloroform containing one volume of methylic alcohol). He was led to the employment of this anæsthetic through the fatal results which recently followed at his hands the employment of chloroform as an anæsthetic; and he has now employed this methylic chloroform in seventeen different instances in women. In two of these the anæsthesia was incomplete, while in fifteen others the sleep was very satisfactory, and might have been readily prolonged indefinitely without inconvenience. Vomiting occurred three times after wakening, once during the narcosis, and in this case the vomiting produced prolapse of the intestine after a laparotomy. He believes, however, that the sleep produced by methylic chloroform has advantages over that due to ordinary chloroform,—the awakening is much more easy, and the discomfort much less. He contends, therefore, that it might be substituted with advantage for ordinary chloroform. Polaillon has likewise employed this agent in ten operations on the male subject; in four cases it was not possible to narcotize the patient, although the attempt was persisted in for more than half an hour. In one case, at the end of seventeen minutes, there was only reduction of sensibility without anæsthesia. In another case, twenty-three minutes after the commencement of administering the anæsthetic, symptoms of asphyxia were noted, and necessitated the performance of tracheotomy. In four cases the anæsthesia was complete, once in ten minutes, one between ten and fifteen minutes.

He, therefore, concludes, that in man the action of methylic chloroform is very slow, that many subjects are rebellious to it, but that the narcosis is very satisfactory when once the anæsthesia is obtained. It thus seems that the slowness of methylic chloroform, and its unreliability in producing narcosis, is a great drawback to its use, and the question arises whether this slowness is counterbalanced by its freedom from danger. Here, of course, a large number of observations are necessary before a reply can be given. It does not seem that we can hope for an affirmative, for in one of Polaillon's cases asphyxia is stated to have occurred. Polaillon, however, believes that it is much less dangerous than pure chloroform.

In the discussion which followed the reading of his paper, M. Leon Le Fort (*Le Progrès Mèdical*, June 29, 1889) stated that he had employed this methylic chloroform for six years without a serious accident, and that on awakening from the narcosis the patient is not, as is so often the case with chloroform and ether, in a state of agitation for the rest of the day. He likewise prefers it to the pure chloroform.

Reports on Therapeutic Progress.

POISONING BY WATER-GAS, AND A NEW METHOD OF TREATMENT.

The subject of the use of water-gas as an illuminating agent has been attracting much notice for several years past, and within the past six years the interest in the subject has greatly increased, owing to the persistent efforts which have been made by interested parties to introduce plants for its manufacture in those States whose citizens have been protected from its direful effects by statute laws.

The symptoms presented by persons affected by the inhalation of this gas do not differ widely from those seen in persons who are deeply unconscious from the effects of other lethal poisons, except that the coma is more persistent and profound, and continues for several hours, with no marked change until near the end of life; then a sudden change in the respiration, a rapid failure of the heart's action, then a few forcible respiratory movements, and the breathing suddenly ceases, and the patient is dead.

As is well known, the poisonous element in water-gas is carbon monoxide, which, when inhaled, produces rapid death by forming a compound with the hæmoglobin which is more stable than that formed by carbon dioxide, and cannot be readily decomposed by oxygen, so that the blood is thus incapable of absorbing oxygen. In coal-gas used for illuminating purposes analysis has shown that carbon monoxide is present in 5.53 per cent., while in water-gas it amounts to 27.46 per cent. In the *Boston Medical and Surgical Journal* for July 11, 1889, DR. D. A. CLEAVELAND reports two cases of poisoning, occurring in women, through inhalation of water-gas which had

escaped into their room while they were probably asleep. One woman was not so deeply affected as the other, and when seen by Dr. Cleaveland was slowly regaining consciousness. The other was found lying upon her bed in a corner of the room remote from the windows, and when seen by Dr. Cleaveland was in profound coma. The countenance livid, the extremities cold, and in fact but little, if any, warmth of any part of the body that was exposed. The coma was completely anæsthetic, and there was an entire suspension of all sensory functions. The pulse would beat eight or ten times with a fair fulness and then run down to a mere flutter, and for a moment be entirely lost at the wrist. Then, again, there would be a few quite forcible beats, followed by rapid diminution and entire suspension.

The respiration corresponded in character, if not in rhythm, with the pulse, there being a few forcible respiratory movements, succeeded by a rapid diminution in their depth until they would cease altogether. Then a sudden forcible inspiration would follow, to be succeeded by the rapid decline and suspension.

There were facial spasms of the right side and large dilatation of the right pupil.

Mucus was collecting in the trachea, giving rise to what is known as the death-rattle.

Hypodermics of ammonia, atropine, and other heart stimulants had been employed; artificial respiration had been kept up almost continuously, with the patient almost constantly exposed to a current of fresh air. Besides this about twenty feet of pure oxygen had been administered by inhalation, and all without the least appreciable effect. Dr. Cleaveland resolved upon transfusion with milk. The patient was bled from the arm until the weakness in the heart-beat gave warning that the limit of safety had been reached, ten ounces in all of blood being withdrawn, and ten ounces of milk were then slowly injected into the median cephalic vein above the right elbow.

The first indication of returning sensibility was noticed when the needle was pushed a little too high in the vein, when nearly through with the injection, and its end impinged against the coats of the vein at the point of union of the cephalic and median cephalic. This sensibility was manifested by a motion, as if caused by a twinge of pain.

Two hours after the operation there was a marked improvement in the appearance of the patient, and four and a half hours after the operation she swallowed and retained stimulants, which she had not done before since she was discovered at 7 A.M., twelve hours previously.

There was on the day following quite a marked redness in the track of the vein above which the opening was made, but it soon subsided on the application of warm lead and opium wash. Excepting this and a very small abscess near the point of incision, which Dr. Down opened as soon as it was in suitable condition, and which did not gather again, there was no further trouble with the arm.

There was also a large and troublesome abscess formed at the angle of the jaw, which was evidently caused by the cold wind blowing on that point for a period of six or seven hours, but there were no unfavorable results from it. Twenty-five days after the operation she was able to sit up, and continued to improve until she perfectly recovered, and has remained well up to the present time.

The advantage of the method of treatment employed by Dr. Cleaveland is to be found in the substitution of milk for blood in transfusion, for in many cases the instruments for drawing the blood and other necessary requirements for the operation of transfusion may not be at hand, even if the blood be attainable. The report further shows how the necessary instruments may be extemporized in an emergency, and will prove as efficacious as any other. Thus, the instruments employed by Dr. Cleaveland were simply a clean Davidson's syringe, an aspirator-needle, the point of the needle being cut off and smoothed on a whetstone, and the needle attached to the nozzle end of the syringe. After as much blood as is safe is removed by bleeding, the orifice in the vein is to be compressed so as to prevent entrance of air, and, after carefully filling the syringe and needle with milk, the needle end may then be introduced into the vein, and about ten ounces very slowly injected.

THE TREATMENT OF SEVERE SUBACUTE RHEUMATISM WITH MASSAGE.

In the *Lancet* for June 22, 1889, MR. H. W. MCCAULLY HAYES reports a case of a strongly built, muscular young man, who was almost completely crippled by a severe attack of muscular rheumatism. He could not use his arms or hands, nor could he stand. He

could not sit up, owing to the severe pain in his back, and it was with great difficulty that he could bend his knees. His hips were so painful that he could not bear them touched, and he complained of a severe pain, superficial in character, in the region of the occipito-frontalis muscle. In addition to this he was greatly distressed by pain in the region of the diaphragm, so much so that on some days he suffered agony on coughing or hiccoughing, and was quite unable to take a deep inspiration. His temperature was 99° F. His previous history was decidedly rheumatic, he having suffered from rheumatic attacks on and off for the past three years. His health was very good during the intervals of the attacks, and he used to take a great deal of out-door exercise in the shape of tricycling, tennis, and boating. Last September he spent his holidays on the river and frequently got wet, and two or three days before this attack he felt a little shivery and out of sorts. The joints were slightly swollen, a little redder than usual, and very tender. His shoulders and the muscles of the immediate neighborhood of the joints were very painful, and the muscles of the forearms were quite useless on account of the pain he suffered when they were used. Both wrist-joints were affected, and the palm of the left hand was exceedingly painful, the middle and ring fingers of the same hand being nearly bent in upon the palm,—that hand being quite useless. All the muscles of his back and those round the hip-joint exceedingly painful. Both knee-joints were affected, the pain being especially severe at the internal condyles. The soles of his feet were exceedingly painful and tender, so much so that he could not bear the slightest pressure upon them, and could not walk. He had a mitral systolic murmur, and the area of cardiac dulness was increased downward and slightly to the left. Urine, high colored, acid, with a copious deposit of urates on standing.

The patient had been treated with alkalies in the early part of this attack, but not getting relief, Mr. Hayes recommended massage, and employed it himself, all medicine being stopped with the exception of a few doses of iodide of potassium, which had to be discontinued on account of the early appearance of the physiological effects of the iodide.

A general shampooing was performed over all the painful parts, and at first he could scarcely bear this process at all. The earlier sittings lasted from ten to fifteen minutes, but this was gradually increased, till at the end of the second week each sitting lasted from thirty to forty minutes. The first sign of improvement was that he began to sleep better at night. After this the pain began to pass gradually away from the different parts in the following order: First, from the muscles of his back and neck, the improvement in this respect being shown by his being able to sit up; then his shoulders and knees got better, and his hip-joints were also much better; in fact, quite comfortable. His wrists did not show much improvement, and, with the palms of his hands and the soles of his feet, resisted treatment for a long time. The pain in the region of the diaphragm was about the last to disappear. The good effects produced by firmly kneading the muscles was shown in this case by the result which followed this procedure when applied to the muscles of the back and neck and to the structures over the large joints. Pétrissage and effleurage were applied to the region of the diaphragm, and combinations of these methods, together with tapotement and friction, were applied to the other parts affected. The patient is now actively employed, and is keeping very well. During the course of massage, which extended over six weeks, hot baths containing washing soda were found very grateful.

THE TREATMENT OF GONORRHŒA.

In the *Medical Record* for July 20, 1889, DR. E. P. RICE summarizes as follows his method of treating gonorrhœa. The patient should be placed in the recumbent position, and, after lubricating an ordinary soft rubber catheter with five per cent. carbolized oil, introduce it as far as the prostatic portion of the urethra. In acute cases it may be necessary to inject a little five per cent. solution of muriate of cocaine, if pain is produced. Now insert into the free end of the catheter an ordinary glass syringe, having a nozzle with an opening sufficiently large to allow the liquid to pass through easily, which will be about the consistence of an ordinary emulsion, and should be made as follows:

℞ Acid. boric., ʒiii;
Glycerini, ʒi.

Mix, and rub well together, and shake well before using.

Pour about two drachms of this mixture into the syringe, having previously withdrawn the plunger. Now, gently insert the plunger, and force the liquid into the catheter, which is held in place with the thumb and fore-

finger of the left hand; the forefinger of the right hand should be used to force in the plunger. After all the liquid has passed out, gently withdraw the catheter, stripping it at the same time in order to force all the liquid into the urethra. Let the patient remain in the recumbent position for ten minutes longer, the whole operation lasting generally about fifteen or twenty minutes. This treatment should be repeated every day, for the first two or three days, and then on each alternate day. As a rule, in acute attacks, five or six treatments will suffice. In long-standing cases the same treatment should be used, alternating with some mild astringent injection used in the same way. The sound should always be used in subacute and chronic cases, at intervals of about three days. It is also advisable to give internally, in all cases, a saline laxative, and in the old cases I generally give, in addition, capsules of bal. copaibii, ℥vi; ol.cubebæ, ℥iv, t. i. d., either before or after meals.

The fact of antisepsis should never be lost sight of, as so many are apt to do. It is a well-known fact that boric or boracic acid is a mild and unirritating antiseptic, which, when combined with glycerin as a vehicle, also an antiseptic, renders it a very safe agent to use for this purpose.

One important point is also gained in this plan. We always have the patient practically under control, and can watch the progress made, not being dependent upon the say-so of the patient.

THE METHOD OF OPENING BUBOES.

The best method of opening a bubo is a matter of much greater importance than at first sight appears, especially to the military surgeon, who is apt to have many of them at one time undergoing treatment. In a recent number of the *British Medical Journal*, Dr. Curran drew attention to the advantages of aspiration *versus* free incision in the evacuation of suppurating buboes. In the *British Medical Journal* for July 6, 1889, Dr. J. P. H. Boileau writes that he long ago abandoned the method of free incision in opening buboes, and he now invariably employs a mere puncture with a narrow-bladed bistoury. By this method an "open bubo" is avoided, as well as the reproach of a protracted cure; not in all cases, though, for sinuses will form that must be opened up, and the consequence of neglect or a vitiated state of constitution must be dealt with. Dr. Boileau claims that the opening of the bubo by free incision, instead of by puncture, often extends the duration of a case from days to weeks, or from weeks to months.

It is necessary to observe that to obtain the best results a bubo should be opened at the proper time; not too soon before a sufficiency of morbid deposit has broken down, nor too late when the vitality of the tissues may have become impaired. The experienced operator chooses the right time, which is probably a very few days after the presence of pus has been diagnosed. The small opening made by the bistoury will often be found closed the following day; it may be reopened by a blunt-pointed probe, if necessary.

The puncture is much less painful than the free incision, and it, of course, has the advantage of leaving but a very small mark, while it has no disadvantage, as it can at any time be converted into as long an incision as may be thought necessary.

THE OCCASIONAL USE OF SOLUTIONS OF NITRATE OF SILVER IN THE TREATMENT OF CHRONIC LARYNGITIS.

At the meeting of the American Laryngological Association, recently held at Washington, D. C. (*Boston Medical and Surgical Journal*, June 27, 1889), Dr. S. Solis-Cohen reported several cases in which local application of nitrate of silver was employed for the relief of chronic laryngitis, such as occurs so often in singers, clergymen, lawyers, etc., in which, after all discoverable sources of irritation, local and general, have been removed, and approved topical treatment suitable to the individual cases has been faithfully tried for a longer or shorter time, improvement takes place to a certain point and then stops. Perhaps all visible evidences of disease, except an irregular, pinkish striping of the vocal bands, have disappeared, or perhaps there would be a faint uniform coloration, or maybe only a loss of lustre, but something there would be that persisted, and that prevented the patient from resuming with comfort full use of the voice in singing or speaking, or perhaps even in ordinary conversation.

It is in such conditions as these—the last obstinate remnants of the disease—that he had derived considerable satisfaction from the topical use, by sponge, cotton-wad, or brush, of weak solutions of silver nitrate, about ten grains to the ounce, applications being made every day for some two or three

days until some congestive reaction is produced; after that at longer intervals. In the course of treatment, too, in some cases before reaching the last stage above described, he had found recovery apparently hastened by occasionally substituting stronger solutions of silver nitrate, forty to sixty grains to the ounce, for the iodized glycerin, tannin, tar, or other routine application. A visible increase in congestion immediately follows the use of the silver solution, but this passes off quickly, and at the next visit great improvement is usually manifested. These applications are made once in about two or three weeks, according to circumstances.

CAFFEINE IN THE TREATMENT OF ADYNAMIC CONDITIONS.

Nearly every one acknowledges the diuretic action of caffeine, but that it will act as a cardiac tonic and excitant when injected subcutaneously is not as generally admitted. Perhaps the reason for this condition is the fear as to the dangerous results of large doses of caffeine. In the *Revue Générale de Clinique et de Thérapeutique*, June 20, 1889, DR. HENRI HUCHARD claims that the efficacy of subcutaneous injections of caffeine is superior as a cardiac stimulant to that of ether, and he refers to a number of cases which seems to substantiate his claim. One of these was a subject suffering from an attack of pneumonia on the right side, which, twelve days later, extended to the left lung, and during the entire attack was accompanied by intestinal complications of the nature of dysenteric colitis and profound depression. There was extreme feebleness, frequent threatenings of syncope, condition of subdelirium, cardiac adynamia, and necrosis of the inferior maxillary bone. During the space of thirty days Dr. Huchard practised ninety-five injections of 4 grains each of caffeine, fifty-one injections of ether, and nineteen injections of nitro-glycerin, the latter being administered to prevent accidents due to cerebral anæmia. The patient was cured, and no general or local accidents followed the one hundred and sixty-five injections, with the exception of a single abscess. In addition, Dr. Huchard refers to five other cases in which caffeine employed alone appeared to produce remarkable results. One of these was a severe case of typhoid fever, in which fifty similar injections were employed, and terminated in cure. Four other cases of severe pneumonia are also referred to in which great benefit appeared to follow the injections of caffeine. Dr. Huchard insists upon the necessity and the utility of large doses, and he writes that he does not hesitate to employ doses of from 30 to 45 grains of caffeine in twenty-four hours, administered subcutaneously. Dr. Huchard claims that his experiments have shown him that caffeine, before acting on the heart, exercises marked action on the central nervous system; and there is thus, therefore, a marked difference in the action of digitalis and caffeine, the former being primarily a cardiac remedy, the latter acting first on the nervous system.

THE PREVENTION OF PUERPERAL SEPTICÆMIA.

At the meeting of the Ontario Medical Association, recently held at Toronto, Canada, DR. A. H. WRIGHT contributed an excellent paper on "The Prevention of Puerperal Septicæmia" (*Medical Record*, July 20, 1889). He said he considered no apology was necessary for bringing such an ordinary subject before the meeting, for he maintained this matter should be continually discussed until sepsis became practically unknown in the lying-in room. It is anything but creditable to the medical profession that puerperal septicæmia is more common in private practice than in well-conducted hospitals? We are not to judge its effects simply from its death-rate, but must also take into account the amount of misery and suffering resulting from the milder forms of septicæmia. Can we prevent this septicæmia? Dr. Wright answered this question in the affirmative. How can it be done? By thorough and perfect cleanliness on the part of ourselves, and the essentials for such are hot water, soap, a nail-brush, and a pen-knife; on the part of our patients, proper clearing of bleeding surfaces and dressings which will keep them clean, and along with these good ventilation, thorough drainage, and perfect plumbing. Dr. Wright cautioned the profession against pinning their faith to any special antiseptic, thinking that, by simply using this, dirty hands and dirty instruments could be employed with impunity; at the same time he believed that modern antiseptic remedies furnish invaluable assistance in efforts towards asepticism. Dr. Wright then gave the following short account of the methods practised in the Burnside Lying-in Hospital, Toronto. On admis-

sion, the patient is bathed and dressed entirely in clothing belonging to the hospital. When labor comes on, she is clothed in a clean night-dress and drawers. The presentation is made out by abdominal palpation. Vaginal examinations are made in the first stage, occasionally, but as seldom as possible. Each one who touches the patient first washes his hands thoroughly, using soap, nail-brush, and pen-knife, and then rinses them out in a solution of bichloride of mercury, 1 to 1000. This process must be repeated before each examination. When the presenting part is pressing on the perineum, the vulva is protected by a towel which has been soaked in the bichloride solution. After the delivery of the child no vaginal examinations are made; the placenta is expressed by the Dublin method. The assistant keeps the uterus contracted with gentle rubbing with the finger-tips. The soiled clothes are then removed, the nurse washing the vulva with a bichloride solution. No vaginal or intrauterine douche is used either before or after delivery. The antiseptic pad is then applied. Dr. Wright then illustrated the making of this pad, which consists of absorbent cotton, enclosed in butter-cloth; before the dry pad is placed in position a layer of absorbent cotton wrung out of a bichloride solution is placed over the vulva, the pad lying on this. Septicæmia had been exceedingly rare in the Burnside during the last few years, the temperature rarely reaching 100° F.; the patients generally go out in two weeks after labor. Dr. Wright objected to vaginal and intrauterine douches, "because they are unpleasant for the patients, because they interfere with the physiological rest which the torn and bruised parts should have, because septic matter or air may be introduced and brought in contact with rents in the cervix, vagina, or vulva, and, finally, because they are unnecessary." He also laid great stress on the danger of introducing the fingers into the vagina after labor; it is entirely uncalled for in the great majority of cases, the placenta being easily expressed by external manipulations; it is at this stage that septic matter is most readily taken up by the open vessels and the abraded surfaces. He believed that puerperal septicæmia is more frequently caused by absorption of septic matter by the torn fourchette or perineum than from any other source; therefore the practitioner should be careful to avoid this by the use of the antiseptic pads, and cleansing the vulva with the bichloride solution when the pads are changed.

TOXIC SYMPTOMS PRODUCED BY GLYCERIN.

Dr. Jaroschi recently reported to a Prague Medical Society a case which had come under his care of a man who, having been induced by something he had seen in a popular journal concerning the virtues of glycerin to take large quantities of it, soon became seriously ill. He suffered from vomiting, painful defecation, and pain in the calves of the legs. Under suitable treatment, the glycerin being of course interdicted, he was not long in recovering. The etiology of the case is not very clear, but it seems that the glycerin used was bought not from a chemist, but from an oil-shop, as it was cheaper there, and it is said that the glycerin of commerce not unfrequently contains a very appreciable quantity of arsenic; at least, Ritzert, who investigated the matter some time ago, reported that he had found "large quantities" of arsenic in commercial glycerin. As glycerin is now very frequently prescribed for rectal use, and as patients frequently purchase it at oil-shops, it would appear to be important to get the question of its liability to contain arsenic settled, and if any uncertainty be found to exist, it would be well to caution patients to buy their glycerin at a chemist's. —*Lancet*, June 29, 1889.

THE ANTIBACILLIC POWER OF THE BALSAM OF PERU.

Landerer's surprising success in the treatment of tubercular processes with balsam of Peru, led Drs. Bräutigam and Nowack to test the action in pure cultures in different degrees of concentration on various micro-organisms (*Centralblatt für Klinische Medizin*, June 15, 1889). They lay considerable stress, in the first place, as to the necessity of having a pure preparation, since there are numerous adulterations of this drug on the market. Their experiments showed that pure balsam of Peru was capable of entirely destroying various micro-organisms within twenty-four hours. In emulsions of twenty per cent. it arrested all development and growth in the different cultures. From the fact, however, that weaker emulsions of balsam of Peru scarcely even delayed the development of bacilli, the authors believe that their experiments prove that the intravenous and intrapulmonary injections of pure balsam of Peru do not owe their value to any antibacillic power possessed by this remedy; but rather to the prevention of the development and ac-

tion of ptomaïnes. They promise subsequent experiments as to the correctness of this latter supposition.

THE TREATMENT OF DISEASED TONSILS WHEN UNATTENDED WITH HYPERTROPHY.

At the meeting of the Eleventh Annual Congress of the American Laryngological Association, recently held in Washington, D. C., Dr. John O. Roe read a paper with the above title (*Boston Medical and Surgical Journal*, June 27, 1889). The conditions referred to are of marked clinical importance, but their consideration is ignored by writers upon these subjects. The most common form of the disease of the tonsil is hypertrophy, and in children it is rare to find any other form. During adolescence the tonsils may diminish in size, but they do not return to their normal condition. The small tonsils in adults have often followed hypertrophy. This is a point in favor of the removal of enlarged tonsils. The two forms of disease of the tonsil to which attention was called were—first, chronic disease of the crypts and lacunæ; and, second, fibroid degeneration of the stroma of the organ, the cicatricial form of the disease. The first is the result of chronic follicular catarrh of the tonsil, and is usually associated with chronic follicular catarrh of the pharynx. The treatment of these conditions is important, not only on account of the disease itself, but also because they are the source of recurrent trouble, and may cause reflex symptoms. Local applications are practically useless. The galvano-cautery, which is useful in the treatment of hypertrophied tonsil, may be employed here, but is not as efficient as it is in the former condition. The treatment *par excellence* is ablation with the knife. The diseased crypts may be laid open and cauterized with chromic acid or fused nitrate of silver. Excision is, however, the best plan. It is rarely advisable to attempt removal of the whole mass at one time on account of the adhesions to the pillars. The use of cocaine lessens pain and hemorrhage. In every instance in which the speaker had employed excision the cure had been perfect, with entire relief from the attendant symptoms.

In the discussion which followed, several members present referred to the effects produced by the presence of hard masses in the crypts and lacunæ of the tonsils.

SUBCUTANEOUS LYMPHORRHAGIA.

Dr. Neufeld mentions in a Polish journal a few cases which have come under his notice, where, in consequence of some injury, extravasation of lymph from a lymphatic vessel has occurred. Six years ago a man was brought into the hospital who had been struck on the thigh with a large piece of coal. There was no discoloration of the skin, but there was a marked fluctuation over a large portion of the anterior and lateral aspects of the thigh. Some years later another patient came into the hospital who had received a blow on the back; here also there was extensive fluctuation, involving the whole of the dorsal region. With regard to the first case, although Dr. Neufeld suspected from the first that the fluctuating fluid was lymph, he was unable to feel certain of it, and up to that time no description of lymphorrhagia had been published in any of the well-known text-books. As the tumor showed no signs of diminishing after a couple of months, he made an extensive incision into it, thus emptying the sac, after which the wound healed rapidly, without fever. In the second patient the fluid disappeared spontaneously after the patient had been lying on his back for six weeks. A third case is mentioned in which no change took place for six weeks. Dr. Neufeld is disposed to agree with Gussenbauer as to the origin of this accident, and believes that the best treatment consists in laying the sac well open during the first few days.—*Lancet*, June 22, 1889.

TANGHININ.

Under the name "tanghin," a substance was formerly used as an ordeal poison in Madagascar, concerning which little information has been obtained, beyond the fact that it was derived from the seed of *Tanghina venenifera*, an apocynaceous plant. Like other judicial tests of the kind, the drug appears to have been variable in its action: sometimes it quickly produced emesis, and nothing worse befel the person on trial, who was, therefore, considered innocent; at other times it was retained in the stomach, and quickly proved fatal, when the victim would, of course, be held to have been guilty. In exhausting with boiling alcohol the crushed seeds, previously treated with carbon bisulphide, and evaporating the tincture, M. Arnaud has recently obtained a crystalline substance that acts powerfully as a poison (*Compt.-Rend.*, cviii. 1255). The compound,

which has been named "tanghinin," is a cardiac poison, approximating in its action to strophanthin and oubain, but differing in producing a general convulsive action. It is colorless, crystallizes in perfect rhombs, is very slightly soluble in water, more soluble in ether, and freely soluble in strong alcohol. It contains no nitrogen, and, although it is decomposed by acids, no reducing sugar is separated.—*Pharmaceutical Journal and Transactions*, June 29, 1889.

THE USE OF MENTHOL IN THE UPPER AIR-PASSAGES.

At the meeting of the Section on Laryngology and Otology of the Fortieth Annual Meeting of the American Medical Association, Dr. F. H. Potter read a paper on "The Use of Menthol in the Upper Air-Passages," and the results produced by him during the past few years of local application (*Medical Record*, July 6, 1889). These results indicate that the drug controls superficial inflammation; that it is an analgesic, and a second application can be made in increasing strength without discomfort; that it is destructive of some of the low forms of life, especially the bacillus tuberculosis, and that it is a valuable antiseptic in nasal surgery. It has an important place in the treatment of atrophic conditions. It can be used in strength of from one to fifty per cent. dissolved in oil. The oleum petrolia the author considers the best for the purpose of dissolving the drug. It can be applied directly by cotton application, or by means of the spray or by vaporization. The direct method answers best in the pharynx, the spray and vapor for the nose and larynx. Five cases of laryngeal phthisis following upon disease of the lungs were also reported, in which the menthol treatment gave satisfactory results, the local conditions improving rapidly under its use.

Dr. Charles H. Knight, of New York, also read a paper on "Menthol in Laryngeal Phthisis." Twenty cases, most of them of a severe type, treated with menthol applications, furnished the author ground for believing that this is a valuable agent in tubercular laryngitis. The drug was dissolved in fluid cosmolene in the proportion of a drachm or a drachm and a half to the ounce, and applied by means of a laryngeal syringe, or in the form of spray, by a nebulizer or vaporizer. In nearly all cases the subjective symptoms and the local appearance improved. In no case did complete healing of an ulcer take place. In this respect the author's experience does not bear out the representations of Rosenberg and others. Three propositions are offered: 1, spontaneous cure of a tubercular ulcer of the larynx may occur; 2, a simple erosion or ulceration may be mistaken for a tubercular ulcer; 3, the best results from local treatment of the larynx may be expected in cases of incipient or limited pulmonary disease and in primary laryngeal tuberculosis.

HYDRACETIN.

It will be remembered that a few months ago (*Pharm. Journ.*, December 1, p. 425), under the name of "pyrodin," a new preparation was introduced as an antipyretic, experience with which called forth repeated cautions as to its toxic action. The preparation was represented as having for its active principle acetylphenylhydrazin ($C_6H_5NH—NH.C_2H_3O$); but, according to one statement, it only represented one-fourth of the activity of that compound. More recently the pure acetylphenylhydrazin has been introduced in Germany under the name "hydracetin," and has been reported upon somewhat favorably by Dr. Guttmann (*Pharm. Centralbl.*, May 16, p. 311; May 30, p. 341). According to Dr. Guttmann, hydracetin exercises a powerfully antipyretic action in relatively small doses, and is also effective in relieving rheumatism of the joints. The doses given ranged from 5 to 20 centigrammes in the day, and in only a few cases to 30 centigrammes; the dose recommended is 10 centigrammes, given in two doses of 5 centigrammes daily. It is expressly stated, however, that its internal administration must be cautiously conducted, and must not be continuous. Hydracetin occurs as a white, odorless, and almost tasteless crystalline powder, soluble in fifty parts of water, and freely in alcohol. It reduces alkaline cupric solution immediately in the cold, and precipitates metallic silver from an alkaline silver solution. Mercuric salts are converted by it into mercurous salts, quite rapidly upon warming, and ferric salts into ferrous. In a mixture of solution of potassium ferricyanide and dilute solution of ferric chloride, the addition of hydracetin produces an immediate precipitation of Berlin blue; it also decolorizes solution of potassium permanganate, and reduces platinic chloride to metallic platinum. Its powerful reducing ac-

tion is considered by Dr. Guttmann to stand in relation to its antipyretic and anodyne properties, and he states that he has also used it with success as an outward application in psoriasis in the form of a ten per cent. ointment.—*Pharmaceutical Journal and Transactions*, June 29, 1889.

THE TREATMENT OF THE ACUTE STAGE OF ECZEMA.

In the *Practitioner* for July, 1889, DR. D. MACKINTOSH publishes some suggestions as to the treatment of the acute stage of eczema, which he claims will speedily arrest the inflammatory stage of the disease, and put an end to perhaps months or years of future suffering.

In the treatment of the acute stage of eczema two essentials must be reckoned with before we proceed to tackle the disease itself. The first of these is, that the patient must be instructed not to wash the eczematous parts, and this advice he must religiously observe. He will probably reply, "But I must wash sometimes." "Wash not at all," is the first commandment in eczema. He must neither wash with, nor yet without, soap, nor with the usual adjuncts of bran steeped in hot water, oatmeal, milk and water, buttermilk, whey, sour milk, or rain-water, or any other of the usual washes; all of these are mistakes that seriously hamper and delay curative treatment. That persistent washing predisposes to eczema by drying the skin, and depriving it of the unctuous secretions which impart to it suppleness and softness, qualities on which the natural beauty of the complexion so largely depends, there cannot be a doubt. For the same reason and in the same manner, although it is not generally known, frequent washing with soap and water is disastrous to the growth of hair, it changes its natural color to a lighter hue, the natural gloss is lost, the hair becomes dry, prematurely gray, and early baldness is favored. This process of destruction is materially hastened by washing the head with warm or hot water and soap during cold weather. The head and beard should be dressed and kept clean by combing and brushing, a process all-sufficient for purposes of cleanliness, and the rational method for preserving a fine head of hair.

In eczema of the head and face the more essential parts to wash, such as the corners of the eyes and angles of the mouth, may be touched lightly with a small piece of soft sponge, made damp with cold water, and immediately dabbed dry. Warm and hot water should be discarded in the neighborhood of the eczematous skin. A patient suffering from eczema of the head and face only may, of course, sponge and wash his body with warm water as frequently as necessary. Coffee, strong tea, and alcoholic drinks should be forbidden.

The second essential is that the bowels be kept well open. In the case of children, gray powder, rhubarb, and bicarbonate of sodium, a grain of each, taken as required every second or third night, will answer every purpose; or gray powder and magnesia will do equally well. In adults, saline medicines hold the first rank. The following is a useful combination:

℞ Magnesii sulphatis, ℥vi;
Sodii bicarbonatis, ℥i;
Infusum gentianæ co., ad ℨvi.
Sig.—Take a sixth part three times a day before meals.

The author claims that the sulphate of magnesium is far and away the best of all purgative medicines in most other diseases as well as in eczema,—the best because the mildest, the least irritating, one of the least injurious, and certainly one of the most effectual; but it must be taken at the proper time and in the proper quantity. The proper time is an hour before meals, preferably in the morning before breakfast, although it may be taken before any other meal with nearly equal benefit. The proper quantity is 3 drachms, dissolved in three parts of a tumblerful of cold water or soda-water. Hot water does not materially help its action, and it makes the drug more nauseous. 3 drachms of sulphate of magnesium, dissolved in an ounce of chloroform-water, followed by a cup of tea or beef-tea, can be swallowed almost without taste or inconvenience. A 4- or 5-grain blue pill taken at night, and the same draught next morning, has its advantages; or, what is perhaps better still, where free purgation is desired, the following pill at bedtime, and the draught in the morning:

℞ Extracti colocynthidis co., gr. iii;
Pilulæ hydrargyri, gr. i;
Extracti hyoscyami, gr. i.
Ft. pil.

Where there is torpidity of the liver, a combination of cascara with nux vomica is equal, if not superior, to any other:

℞ Extracti cascaræ sagradæ liquidi, ℥iiiss;
Tincturæ nucis vomicæ, ℥i;
Glycerini, ℥iii;
Infusum gentianæ co., ad ℨviii.
Sig.—Take one ounce every evening directly before dinner, or morning and evening if required.

Medicines, such as arsenic and iodide of potassium, given internally, are disappointing, and of very little use. Of course, gouty eczema must be suitably treated.

The great desideratum is the appropriate external treatment. Dr. Mackintosh gives the following as an ointment which in most cases pretty nearly approaches the character of a specific:

℞ Bismuthi subnitratis, ʒiv;
Zinci oxidi, ʒi;
Acidi carbolici liquidi, ʒss;
Vaselini albi, ℥ii.
Ft. ung.

Or

℞ Bismuthi subnitratis, ʒii;
Zinci oxidi, ʒss;
Glycerini (Price's), ʒiss;
Acidi carbolici liquidi, ♏xx;
Vaselini albi, ʒvi.
Ft. ung.

The latter ointment mixes into a beautiful enamel-like cream, which is cooling, and acts as a balm to the irritable skin.

When constant tingling and irritation disturb the patient's rest at night, this lotion is said to be invaluable:

℞ Bismuthi subnitratis, ʒi;
Glycerini (Price's), ʒiv;
Acidi carbolici liquidi, ♏xii;
Aquam rosæ, ad ℥i.
Sig.—Shake up, and apply with a camel's hair pencil.

During the day, when business has to be attended to, and the ointment cannot be applied, a powder will be found useful:

℞ Cimolite,
Bismuthi subnitratis,
Zinci oxidi, aā partes æquales.
Fiat pulvis.

In more chronic cases the famous *Unguentum metallorum* still holds its own. It consists of

Unguenti zinci,
" plumbi acetatis,
" hydrargyri nitratis, aā partes æquales. Misce.

This ointment may be varied by substituting white precipitate for the nitrate of mercury ointment.

TREATMENT OF WHOOPING-COUGH.

In the *Revue Mensuelle des Maladies de l'Enfance* for July, 1889, Dr. O. Mugdan reports the results of treatment of whooping-cough in Dr. Baginsky's clinic with resorcin, antipyrin, cocaine, and insufflations of different powders through the nose.

1. *Resorcin.*—Moncorvo was the first to employ resorcin in whooping-cough. Starting with the idea that whooping-cough is an infectious catarrh, produced by micro-organisms which are located especially on the laryngeal mucous membrane below the vocal cords, this author was led to employ a solution of resorcin by means of the spray, first employing a one or two per cent. solution, and finally an eight per cent. solution. In Baginsky's clinic resorcin has been employed in the form of sprays, and given internally, but without any appreciable result. In eight children in which a one or a one and a half per cent. solution was given every two hours, in not one was there the least relief obtained through this treatment. Consequently, if these results are accepted, the internal administration of resorcin is totally valueless. According to the researches of Afanasieff, the tendency is to admit that the bacillus of whooping-cough, so far from being located exclusively on the laryngeal mucous membrane, in the neighborhood of the vocal cords, invades all the respiratory mucous membrane, and particularly that of the bronchii and nasal fossæ. In these conditions inhalations of a solution of fifteen or twenty per cent. of resorcin might perhaps give appreciable results.

2. *Cocaine.*—Spraying with cocaine was first employed by Prior, who, with a five or ten per cent. solution, in this way anæsthetized the pharynx and posterior wall of the larynx and the inferior surface of the vocal cords. The good results of this method of treatment have been confirmed by a large number of authors, among others Pott, Carr, Barbillion. On the other hand, Moncorvo, Hagenbach, and Henoch have contested the efficacy of this mode of treatment. In eleven cases under the care of Dr. Baginsky submitted to this treatment, the number and intensity of the attacks have been favorably modified in the majority of cases; but, nevertheless, the author is of the opinion that this mode of treatment should not be employed on account of the great resistance which most children offer to it, and on the frequency of the symptoms of poisoning which follow the employment of this treatment in many cases.

3. *Insufflation.*—Michael, considering whooping-cough as a reflex neurosis from the nose produced from irritation by the specific poison of whooping-cough, recommends the employment of insufflation of boric acid

and quinine, and later benzoic acid, in the nasal fossæ. The results which he has obtained, however, have not been satisfying. About the same time, Guerder made insufflations with equal parts of boric acid and powdered coffee, and his results were quite as good as those of Michael. Bachem, Hagenbach, Stœrk, and Lublinski have likewise recognized the good effects of this mode of treatment, while Genser alone claims that these insufflations have no effect on the progress of the disease. In Baginsky's clinic Dr. Mugdan gives notes of twenty-five cases which were submitted to methodical insufflation with benzoic acid; of these, seventeen showed marked amelioration after the very first insufflation, and a cure was generally obtained within one to three weeks.

4. *Antipyrin.*—Recently antipyrin has been employed in whooping cough, and most physicians who have experimented with this agent have obtained favorable results. In Baginsky's clinic, however, it is stated that the results were negative in all the cases treated by antipyrin under the method of Sonnenberger, who recommends the administration of three or four times daily of one-sixth grain for every month of age of the child, or two grains per every year of age. In seven cases treated after this method neither the intensity nor the number of the attacks showed any modification. Further, this remedy is by no means innocuous, and reports of poisoning with it are rapidly accumulating on all sides.

THE TREATMENT OF PRURITUS WITH MENTHOL.

The analgesic properties of this substance have been utilized to diminish pruritus in various skin-affections, and especially senile pruritus, the pruritus of eczema, that of the itch, and in urticaria. In the *Gazette Hebdomadaire de Médecine et de Chirurgie*, June 21, 1889, Dr. Eloy gives the following formulæ for the tincture, liniment, and ointment of menthol.

1. *Tincture or Spirit of Menthol.*—

Menthol, 1 to 3 parts;
Forty per cent. alcohol, 50 to 60 parts.
For external application.

2. *Liniment of Menthol.*—This preparation appears to have a more durable action than the preceding. Its formula is as follows:

Menthol, 3 parts;
Olive oil, 30 parts;
Lanolin, 30 parts.

3. *Ointment of Menthol.*—The ointment, according to the formula of Saalfield, has the following composition:

Menthol, 2½ parts;
Balsam of Peru, 5 parts;
Lanolin, 100 parts.

In certain cases it may be necessary to increase the proportion of menthol in the above preparation up to ten or fifteen per cent. of the excipient when the pruritus is very rebellious, especially when it occurs in chronic eczema.

THE VALUE OF THE KOLA NUT.

In the *Practitioner* for July, 1889, Surgeon R. H. Firth published a series of observations made at the Mian Mir Camp of Exercise during January, 1889, which was a continuation of a similar series conducted at Umballa during January, 1888. He formulates the following conclusions as the results of this series of observations:

1. That kola nut is in no sense a food; it is to be regarded purely as a drug.

2. That its physiological action upon the human economy is to increase the total urinary water, with a slight reduction of its total solids and a marked reduction of the extractives eliminated by the urine. Such action is probably due to its contained caffeine, which favors increased oxidation of the tissues. It in no way affects the nitrogen output of the body.

3. That kola nut, when pure and not too old, has a peculiar stimulant action on the nervous system, temporarily strengthens the heart-beat, and increases the arterial tension. Taken continuously during times of exertion and fasting, it possesses some power of warding off the sense of mental and physical depression or exhaustion peculiar to that condition; this power is not, however, so marked as some observers have reported.

4. That it might be employed on service as an issue to troops in the form of broken-up nuts, the same being issued with instructions that a piece be constantly kept in the mouth and chewed, and the saliva swallowed. The facts being made clear to the men that, though not in themselves a food, yet, from certain qualities inherent in them, the nuts guard against exhaustion, and moreover have a salutary action upon the lining membrane of the mouth, stomach, and intestines, rendering them less susceptible to the action of

indifferent food and water. Owing to the uncertainty of the action of kola nuts, and the great difficulties to be overcome in combating the prejudices of soldiers towards any new and unfamiliar article such as these nuts are, any issue of kola nuts to troops by government should at first be upon only a limited scale, as neither our present knowledge regarding them nor the results of their trial justify any large outlay.

5. That as an infusion with milk and sugar kola powder is an efficient substitute for tea or coffee, being especially for those affected with diarrhœa superior to either owing to its astringent action.

6. That as a therapeutic agent in the convalescence from long sickness its value is not apparent.

7. That its alleged antagonistic action to alcoholic sequelæ is not capable of proof.

8. That as a purifier of water its action is purely mechanical, and not superior to that of the *Strychnos potulorum* or other mucilaginous seeds.

9. That any consigment of kola nuts bought for government for issue to troops needs most reliable supervision, in order that none but the seeds of the true or "female kola" are issued, and that spurious seeds, such as those of *Garcinia kola* or "male kola," and *Sterculia cordifolia*, species which contain no caffeine, are not issued in mistake for the true nut.

10. That while the nut powdered and made into an infusion with boiling water is an agreeable way of taking kola; yet the nut should be always freshly ground, and this method is inferior to continual mastication of the solid nut for dietetic emergencies. Those chewing the nut must do so continuously, keeping it in the mouth all day, and swallowing the saliva if any satisfactory effects are to be attained.

CREOLIN ECZEMA.

In the *Therapeutische Monatshefte* for June, 1889, Dr. J. Wackez states that, led by the statements as to the innocuousness of creolin, he employed it in seventeen cases of incised and lacerated wounds occurring in children, in ten of whom union by primary intention occurred, while in seven more or less severe eczema occurred. The skin in the neighborhood of the wound on the second day of the creolin treatment became markedly reddened, almost resembling an eruption of scarlatina, with severe itching. On the third day numerous vesicles formed, filled with clear fluid, and attained the size of from a quarter to half a dollar. The temperature was elevated, the neighboring lymphatic glands swollen, with loss of appetite, headache, and frequent vomiting. On the third day after the vesicles had been emptied, either spontaneously or artificially,—a process which is accompanied by the profuse excretion of serum,—the epidermis pealed off in large flakes, and a condition similar to that of a burn of the second degree resulted. From the scratching, which was the consequence of the severe itching, other parts of the body were likewise affected, and vesicles appeared on the face or hand, as a consequence of contact with the effused serum. From the fact that no other antiseptic than creolin was used, and that in the dilution of 1 to 1000, the conclusion is warrantable that creolin itself was the cause of the eczema. From the fact that there was alteration in the general health of the patients who were subjects of these attacks of eczema, the urine was subjected to chemical examination, and showed elimination of phenol and an increase in the aromatic etherial sulphuric acid compounds. These results would appear to show that creolin is by no means an absolutely harmless substance, and should not be employed for children without hesitation. Nevertheless, even in these cases of Dr. Wackez, rapid cure of the wound is stated to have taken place even in spite of the occurrence of eczema.

HYSTERIA AND MERCURIAL POISONING.

In his lectures at the Necker Hospital, Dr. Rendu presented a patient, 38 years of age, admitted ten days before with incoordination of motion, marked trembling of all the limbs, but especially of the lower extremities, so that the least movement brought on decided oscillations. At the present time the movements cease when the patient lies in bed, but the least attempt at motion, even in the recumbent position, brings on quite intense trepidation. Flexion produces more spasm than extension. The trembling is characterized by large oscillations, and not by small ones, as in alcoholic intoxication. The muscle itself has an exaggerated tonicity, and the slightest percussion determines an extended reflex upon the neighboring muscles, showing the existence of a peculiar condition of the spinal cord, and since, lying in bed, he can execute all movements which he is told to with suffi-

cient force and without the least exaggeration, the condition is not one of true ataxia, though in walking the limbs are thrown about just as in the latter disease, and if the eyes are closed while upon his feet, he falls at once. Troubles of sensation are also present, such as fulgurating pains in the lumbar region radiating towards the upper parts of the thighs, in the region of the knee-joints radiating towards the malleoli, etc. Even if this were a case of ataxia it would not be one of tabes, since the tendon reflex, far from being suppressed, as in ataxia, is exaggerated, and, besides the trembling, has not the character of that of ataxia. In pseudo-tabes there is a tendency to peripheral lesions of nerves more than to a spinal state. It is met with especially in alcoholics, in infectious diseases, lead and oxide of carbon poisoning, in hysterics, and is always accompanied by a certain degree of paresis and diminution of force. In alcoholic pseudo-tabes the patients complain generally of persistent pains in certain groups of muscles, notably in those of the calf, and there is almost always a diminution of the tendon reflex. Spasmodic tabes is a rare affection, analogous to this case, but showing also muscular paresis and contraction here absent. The peculiarities of this case are that the trembling began in the lower extremities, that the head has not been affected, and that this man has had no loss of power, contrary to what usually happens in mercurial poisoning. In looking into the antecedent history, we find that the patient is a well-recognized hysteric, who has been treated by Charcot at the Salpêtrière, having had hemiplegia with complete sensory and sensitive anæsthesia at one time, and paraplegia of both lower extremities and general anæsthesia at another. At the same time, however, he is suffering from the effects of mercury upon the system, and it is well known how this metal has an influence to bring forth hysteria in men. Up to the age of twenty-seven this man was well; he then began to work in the manufacture of hats, being exclusively employed in preparing rabbit-skins, in which, as is well known, nitrate of mercury is used.

Within a year the system became impregnated with the mercury, and trembling of the legs began. After three months' hospital treatment he went back to work, but within two months became salivated, and since that time the trembling of the legs has never ceased.

Treatment has consisted in an evening dose of 2 grammes (30 grs.) of bromide of potassium and a morning dose of 30 drops of tincture of valerian. Besides this, he has had hydrotherapy, and, if improvement is not satisfactory, prolonged baths and the continuous current of electricity will be used.—*Journal of Cutaneous and Genito-Urinary Diseases*, August, 1889.

ASEPTIC AND ANTISEPTIC SURGERY.

At the recent annual meeting of the Massachusetts Medical Society, DR. H. L. BURRILL, of Boston, read a paper on this subject, in the Section in Surgery (*New York Medical Journal*, July 27, 1889), in which, remarking upon the great value which the new science of bacteriology was destined to have with reference to the department of practical surgery, he proceeded to describe in detail a number of experiments conducted by himself and Grenville R. Tucker, which were intended to show by what methods, and by the use of what chemical agents, the various instruments and the separate steps in operative surgery might be rendered practically aseptic.

1. As to the preparation of the room for an operation, he said that all movable objects should be removed; then the room should be carefully swept and dusted, and the walls sponged over with a sublimate solution (1 to 1000). In emergency cases nothing should be disturbed.

2. As to the toilet of the surgeon and his assistants, their hands should be washed according to the usual methods,—viz., soap, nail-brush, etc., then immersed in ether, then in corrosive sublimate solution (1 to 1000).

3. As to the preparation of the operative field, it should be shaved if necessary, scrubbed with soap and water, and then washed with ether and corrosive sublimate (1 to 1000).

4. As to the sterilization of instruments, Dr. Burrill concluded that of all methods, that of baking the instruments in an oven at a temperature of from 140° to 160° C. was the best. A higher temperature injured them. Needles should be subjected to a similar process.

5. As to the disinfection of sponges, steaming caused great shrinking; the most satisfactory method, attaining at the same time to wellnigh perfect sterilization, consisted in washing sponges in running water again and again, then placing them in a solution of permanganate of potassium for twelve hours, then washing them in oxalic acid, then wash-

ing, then placing in carbolic acid (1 to 40) in jars, and storing for future use.

6. As to ligatures, they should be taken from original bottles, wound upon glass spools, and placed in a solution of corrosive sublimate (1 to 1000) in a bottle specially designed by Mr. Tucker.

7. As to irrigation, corrosive sublimate (1 to 4000) was most satisfactory.

8. As to the dressings, to render them aseptic, they should be taken in the shape of bleached gauze, and subjected to a temperature of 150° C., then saturated with a ten per cent. solution of glycerin, then dried. Thus treated, they were possessed of marked absorbent properties, excelling in this respect all other dressings.

In conclusion, the author urged the importance of putting these methods into practice, and, though he admitted the difficulty of absolute sterilization, yet it was possible to approach very closely thereto. Every surgeon, he thought, should operate with thoroughly cleansed hands, with thoroughly cleansed instruments, upon a thoroughly cleansed patient.

In the discussion which followed, Dr. J. C. Warren, of Boston, remarked upon the ill effects oftentimes arising from a too free use of the so-called germicides in efforts to procure asepsis. The safety of drugs in this respect was inversely proportional to their power as germicides. Boric acid, for instance, was perfectly safe, yet had no antiseptic action whatever, as it was used in ordinary wounds. He could not advise too strongly against a too lavish use of antiseptics in the dressing of wounds. He cited a case of carbolic acid poisoning in a patient suffering from slight burns of the hands and face, which had been treated with carbolized vaseline (1 to 40). Since having a patient suffer from high temperature, insomnia, and then delirium, because of a too generous use of iodoform in powder after an operation for proctocele, he had ceased using it, preferring the gauze instead. He did not mean to convey the idea that he looked with disfavor upon antisepsis. He would always use germicides with a view of equalizing the equation of personal cleanliness, and of counteracting the general tendency to dirt in patients. Something more was needed than simple soap and water.

The speaker referred to the series of experiments by Watson Cheyne, which tended to prove that different portions of the body were possessed of different powers of resistance to the influence of infection of bacteria and micrococci: for example, the peritoneal cavity was remarkably tolerant of the action of bacteria or septic materials, and did this not explain the success attending surgeons in their operations in this region, where no antiseptic precautions whatever were taken? Other places more cellular in structure were less tolerant, and disregard in taking antiseptic precautions would show correspondingly bad results in operations.

Dr. A. T. Cabot, of Boston, remarked that the chief use to be made of antiseptics was in the way of preparation,—preparation of the hands, sponges, instruments, and surface to be operated on. This being done, we could proceed much as surgeons used to,—with care that the instruments did not come in contact with objects not previously disinfected. He said that the two agents most promotive of putrefaction, and thus of poor results in operations, were (1) moisture and (2) heat. The former could be largely done away with by proper attention in applying the dressings. All blood should be scrupulously sponged out before closing the wound; a drainage-tube should be properly introduced, and then firm pressure made and kept up while the outside bandages were being arranged, and in this manner prevent the filling up of the wound with blood and serum. It was often desirable to sew the deeper parts of a wound together, so that healing by first intention might result. As to the use of iodoform, boric acid powder, etc., he believed that the explanation of their favorable action on wounds and suppurating surfaces was to be found in their drying qualities. Dressings should always be dry and have great absorbent power. When impregnated with these powders, they possessed these qualities to a marked degree, and so kept the wound dry and promoted rapid healing. If he were compelled to abandon either antiseptic washes or dry dressings, he would unhesitatingly give up the former.

EFFECTS OF PROLONGED CHLOROFORM ANÆSTHESIA.

Some observations made about two years ago by Dr. Ungar pointed to fatty degeneration of the heart and liver as the cause of death after repeated prolonged administration of chloroform. Further experiments on dogs have recently been made by Dr. Strassman, which appear to confirm this view. Dr.

Strassman found that the first organ to be affected was the liver, then the heart, and after that other viscera. The nature of the morbid change was not a fatty degeneration, but fatty infiltration. The actual cause of death in fatal cases appeared to be the cardiac affection, as in all such a very marked degree of change was found in the heart. In non-fatal cases the morbid change was found to have disappeared in a few weeks' time. When morphine was given previously to the chloroform, less of the latter was required, and consequently the changes produced were not so considerable as when the ordinary amount was given. Animals suffering from hunger, loss of blood, etc., were especially predisposed to the morbid changes due to chloroform.—*Lancet*, July 20, 1889.

THE TREATMENT OF INTESTINAL OCCLUSION WITH ELECTRICITY.

At a meeting of the French Academy of Medicine, M. HÉRARD presented a report on the essay of M. Larat as to the treatment of intestinal occlusion with electricity. In twenty-four cases the author claims that he has obtained ten complete cures and six incomplete cures, in the sense of removal of intestinal occlusion; although in the latter cases death occurred, whether from exhaustion, peritonitis, or some organic lesion. The fact is further recalled that M. Boudet in similar cases was rewarded by seventy per cent. of cures.

Faradization is indicated by acute strangulation, while galvanism is said to be indicated in slow occlusion with paresis of the intestine. For convenience induced currents may be associated with success. The electrolytic action of the galvanic current may be avoided by disseminating the current through the aid of an enema of salt water.

In the discussion which followed the announcement of these results, M. LE FORT was of the opinion that electricity might give favorable results in obstinate constipation, but in cases of true obstruction or invagination its therapeutic action was much more uncertain.

M. CONSTANTINE PAUL, on the other hand, claimed that galvanization was almost always followed by success when the obstruction was located in the large intestine; but, if its seat was in the small intestine, and if an invagination was present, he believed that it would be very dangerous to cause contraction of the intestinal tube upon an immovable mass.

M. HÉRARD stated that in his experience invagination was much more common in the large intestine; nevertheless, faradization might succeed in invagination of the small intestine. He believed, however, that it was impossible during life to form an absolute diagnosis.

THE ETIOLOGY OF TYPHOID FEVER.

At a recent meeting of the American Medical Society, held in Newport, R. I., DR. V. C. VAUGHAN, of Ann Arbor, Mich., read a paper on the "Etiology of Typhoid Fever," in which he claims to have detected a chemical poison in the dejecta of patients suffering with this disease, which appears to be of the nature of a ptomaïne (*Boston Medical and Surgical Journal*, July 18, 1889). Dr. Vaughan refers to the researches of Professor C. J. Eberth, of Zurich, who, in eighteen out of forty-eight cases of typhoid fever, found in sections of the spleen and mesenteric glands a bacillus, which was distinguished from the ordinary putrefactive bacilli by the difficulty with which it took up the aniline stains. At the same time Eberth reported that in twenty-four similar examinations of those dead from other diseases, he was unable to detect this bacillus, and from these facts thought himself entitled to claim that he had discovered the true germ of typhoid fever. Since that time various experiments had been made by many different observers. The attempts which had been made to induce the disease in the lower animals by inoculation with this germ were numerous and interesting.

To sum up the evidence which we had upon this point, we might say: 1, the Eberth germ was found invariably in the bodies of those dead from typhoid fever; 2, it had been isolated, and grown in pure cultures; 3, all attempts to induce typhoid fever in the lower animals by inoculation with this germ had thus far been without success; 4, experiments showed not only that the germ failed to multiply in the lower animals, but that when introduced by inoculation it soon died.

Dr. Vaughan thought it was now time to add this rule to the four rules of Koch: Before any micro-organism could be considered the true and sufficient cause of a given disease, it must be shown that the chemical products of that germ were capable of producing the characteristic symptoms and lesions of that disease in an acute form. Did this

germ produce any chemical substance which would markedly elevate the temperature, such as mydaleine, or any which induced local inflammatory and necrotic changes in the tissues, such as cadaverine or putrescine? We could not say that the Eberth germ had been demonstrated to be the true and sufficient cause of typhoid fever, judging from the failure of the attempts of Brieger in investigating the nature of typhoid poison. To sum up the results of experiments on this point: 1, the result obtained from injections of the Eberth germ was found to be in direct proportion to the amount introduced; 2, that the Eberth germ did not multiply in the blood; 3, the same symptoms and lesions were obtained by the introduction of non-pathogenic organisms. To this the bacteriologist might reply that the lower animals did not have typhoid fever. If we could experiment with man the result would be different.

Dr. Vaughan then described his own experiments in attempting to discover a chemical poison excreted by the Eberth germ. He took the fæces of typhoid patients, from which he obtained these germs. The germs were cultivated. His next step was to obtain a chemical poison, which he succeeded in isolating. Crystals of this ptomaïne were injected over the abdomen of an animal, with resulting fever, severe purging, etc. This ptomaïne was found to be most abundant when the culture was kept at about 104° F. Dr. Vaughan had not completed his series of experiments, and therefore had no definite statements to make respecting this alkaloid, to which he had not as yet given a name.

In the discussion which followed, Dr. W. H. Welch, Baltimore, agreed with the conclusions the reader had drawn from the experiments which investigators had made as to the pathogenic qualities of this typhoid bacillus in animals, but he protested against the setting up of a condition as essential for demonstrating the dependence of an infectious disease upon a micro-organism. He thought we were justified in considering that a germ was the cause of a disease when we found that germ invariably present in the disease in situations which would explain the symptoms of the disease, and when we failed to find that germ in any other circumstances than in that disease. If Dr. Vaughan's condition was to be accepted, he did not know that there was a single disease which had been proven to be dependent upon a micro-organism. It was uncertain whether all micro-organisms which were pathogenic produced their effects by means of chemical substances which they formed. Doubtless that was true of some, but we were not justified in assuming that it was the sole method. He believed the evidence was conclusive that the typhoid bacillus was the cause of typhoid fever. It was a peculiar organism, which was found invariably, if we examined at the proper stage of the disease, in persons sick or dead from typhoid fever. It was found in the situations where we would expect the organism to be found, and had never been found in other situations, except in infected localities, as in drinking waters, etc. The isolation of the ptomaïne in a crystalline form from the stools of typhoid fever patients was a very interesting addition to our knowledge, but it would be necessary to make investigations with other stools not infected with typhoid fever before concluding that the ptomaïne had anything to do with the symptoms of typhoid fever.

Dr. James Tyson, of Philadelphia, said with regard to the fact that a chemical product must be discovered in the blood or tissues of the animal, he would say nothing, but it seemed to him perfectly reasonable to expect that the same organism which had been found in the animal originally affected should also be found in the blood or tissues of the one in which the disease had been reproduced. That was the accepted original idea. It seemed to him that it would be very much more conclusive proof, if we found the organism in the individual secondarily affected, that it was the cause of the disease, rather than if we simply found it in the individual primarily affected.

Dr. V. C. Vaughan, in closing the discussion, said that Dr. Koch, in a conversation with him recently, had expressed the opinion that the Eberth germ had not been demonstrated to be the cause of typhoid fever. Koch had laid down four rules: before we could say that any germ was the cause of a given disease we must (*a*) find it in every case of that disease; (*b*) isolate it from all other material; (*c*) healthy animals of the came species inoculated with that germ must have that disease; (*d*) in the animals inoculated with this disease the germ must grow and reproduce itself. Where these rules had been complied with, there could be no possibility of doubt about the germ being the cause of the disease. Dr. Welch asked us to give up every one of these rules save the first, and that we must say that a germ was

the cause of a disease when we found it in every case of that disease. Germs depended on the conditions surrounding them. As long as the bacillus of tuberculosis was found in every case of consumption and in no other disease, and no consumption had been produced in healthy animals by it, he claimed he would have had just as much right to say that it was the result of the consumption as they would have to say it was the cause. The proof was not and could not be complete until that germ was isolated from all other material and healthy animals inoculated with it had consumption. Simply because the Eberth germ was found in every case of typhoid fever could not be a proof that it was the cause of typhoid fever. He did not mean to say that every germ produced its deleterious effects by means of its ptomaïne, but did mean to say that this had been demonstrated for a number of diseases,—for anthrax, tetanus, etc.

INHERITANCE OF SYPHILIS.

According to the Paris correspondent of the *Lancet*, July 20, 1889, PROFESSOR FOURNIER delivered an interesting lecture on the "Inheritance of Syphilis," considering the question from the point of view of a threefold interest:

1. *The Scientific Interest.*—In this connection several important points at once appeared worthy the serious attention of medical men. In the first place, Is syphilis hereditary? If so, does it pass down through the medium of the father or mother, or both? At what stage and up to what length of time is syphilis capable of exercising its hereditary influence, and then what power have treatment and time over its career?

2. *The Practical Interest.*—Can one weaken or eradicate this hereditary influence? When and under what conditions can a man who has contracted syphilis be permitted to marry? What about treating a syphilitic who is pregnant, or a woman who has conceived through the medium of a man who is known to be a syphilitic? Is one justified in allowing a healthy nurse to run the risk involved in suckling the offspring of syphilitic parents?

3. *The Social Interest.*—In the face of the enormous mortality following in the train of syphilis, this is by no means the least of the interests attaching to this "factor in depopulation." Its effects amount, indeed, to a veritable social calamity, and, this being so, does not the matter call aloud for some effectual social prophylaxis? Thus, then, without insisting further, it would be conceded that the question of syphilitic heredity was one well worthy the study of the *savant*, the physician, and the hygienist, by reason of its multiple and varied consequences, — consequences highly interesting and in not a few aspects capital.

Professor Fournier next defined in detail what he meant should be understood by heredity in a strictly medical sense, and which differed from the ordinary acceptation of the term where the word was made to include such diseases as the gouty diathesis and smallpox, which latter may have been contracted during pregnancy by the mother and transmitted to the fœtus. In the same way syphilis contracted during pregnancy by the mother and transmitted to the fœtus was classed as hereditary. But this was not what he meant by hereditary syphilis. The differences, clinical and otherwise, between true hereditary syphilis and syphilis by intrauterine contamination were well defined. True hereditary syphilis was that which was transmitted at the moment of conception to the embryonic elements by one or other of the parents in whom it was pre-existent. It was, he urged, clear that a disease which was born with the germ, which made part of it, and which affected it from its very origin, ought to be distinguished from a malady which was contracted by the fœtus already more or less formed and advanced in development. And, as a matter of important fact, observation and experience unite in showing that veritable hereditary syphilis is infinitely more grave and more deadly to the fœtus than the syphilis which is transmitted to it in any of the subsequent stages of its intrauterine life. For the present he was concerned with the true variety only. To begin with, he would not try the patience of his hearers by bringing forward proofs of the existence of true hereditary syphilis. This, he opined, was generally conceded. How, then, it may be asked, do the influences of hereditary syphilis manifest themselves? By manifestations essentially multiple and varied,—infinitely more varied and more multiple than are commonly believed or are traced, especially in the schools of pathology and morbid anatomy; but, although numerous, it is still possible, for practical purposes of exposition, to arrange them under five heads, and, according to the learned lecturer, they may be grouped as follows: 1, accidents of

syphilis, properly so called; 2, fœtal cachexia, ending one way or another in physical degeneration; 3, dystrophic troubles, general or partial; 4, congenital malformations; 5, morbid predispositions. As regards the first, they appear in order, although the sequence may vary; the infection may manifest itself *in utero*. More commonly, it makes its appearance some weeks or months after birth; the former he terms fœtal syphilis, the latter infantile syphilis. More rarely, it may be not only latent at birth, but latent during the first years of life, not entering the stage of apparent evolution until the fifth, tenth, fifteenth, or twentieth year. But, contrary to the opinion commonly held, true hereditary syphilis does not make its appearance by manifestations of the syphilitic order exclusively. It shows itself not unfrequently in a variety of ways,—lesions and symptoms which, although they may not have the ordinary aspect or syphilitic stamp, are not less the undeniable consequences of syphilis. Professor Fournier went on to say that one of the convictions most firmly fixed in his mind, after long study and observation, was that syphilis is not a disease with symptoms and lesions such as are usually accepted as syphilitic only, but that it is a disease, as he puts it, of the whole being, which, by the general reaction it exercises on the organism, is capable of exciting, side by side with the symptoms or manifestations proper, others of another order, which are no longer syphilitic in the ordinary sense, although indirectly derived from syphilis, and which he proposes to term "parasyphilitic." It is thus that one so frequently sees the following manifestations of hereditary syphilis from time to time, which may be put under the foregoing head:

2. *Fœtal cachexia*, or veritable vital degeneration of the fœtus, manifesting itself either by the premature death of the fœtus or the birth of infants wretchedly puny and miserable,—veritable abortions, awaiting early death; or, again, by the birth of others apparently more robust, but in reality of a vital resistance so feeble that a goodly number of them die of the least incidental trouble, and others of no assignable cause.

3. *Dystrophic Troubles.*—In this category he puts some curious examples of retarded and arrested development,—such as slowness of general growth; the appearance of the teeth and locomotive function; retarded puberty and virility, so that very frequently examples were met with of persons of eighteen and twenty years of age who were yet children. What is termed "infantilism," then, is one of the traits which compose the physiognomy of hereditary syphilis.

4. *Congenital Malformations.*—His own opinion was quite in accord with that of Professor Lannelongue and others, which attributed to syphilis of the true hereditary type the origin of the divers congenital malformations,—such as malformed limbs, club-foot, spina bifida, hare-lip, cleft palate, hydrocephalus, etc. This, he added, cannot yet be dogmatically set down as demonstrated, although he believed it was on its way to be.

5. *Morbid Predispositions.*—It cannot be doubted, Professor Fournier continued, that hereditary syphilis, by reason, without doubt, of the state of relative impoverishment in which it places the organism, constitutes a decided predisposition to various maladies. It is incontestable, for example, that these infants are especially subject to affections of the nervous system. A great number die of convulsions and meningitis. Even if syphilis be not a direct cause of rickets, it is certain that it predisposes to it in a powerful manner, and that it represents one of its factors. Furthermore, the frequency of scrofulo-tuberculous affections in infants the offspring of syphilitic parentage has long been noted, and the possible transformation of syphilis into scrofula has even been discussed. This theory, however, after the discovery of the bacillus of Koch, cannot be longer sustained; but it is not less certain, for all that, that the syphilitic soil is eminently fitted and lends itself willingly to the culture of the bacillus. It is, in short, undeniable that hereditary syphilis pays a large tribute to the diverse manifestations of scrofulo-tuberculosis, and notably to affections of bones,—such, for example, as Pott's disease and hip-joint disease.

PHENACETIN IN WHOOPING-COUGH.

Dr. R. Heinmann reports in the *Journal de Médecine de Paris*, July 7, 1889, that he has obtained excellent results in whooping-cough from the employment of phenacetin. In cases in which before the treatment the paroxysms of coughing occurred ten to fifteen times daily, they have, under this treatment, been reduced to three, and in some cases have completely disappeared within a few days, only occurring occasionally at night, when the administration of the remedy was suspended.

The doses which he employed were as fol-

lows: 6 grains, given in four doses, to a child 3 years of age; 5 grains, in three doses, to a child 2 years of age; 3 grains, in four doses, of about ¾ of a grain to a nursing infant 7 months of age.

Dr. Heinmann writes that he never observed any unpleasant after-effects. It does not appear, however, that the remedy produces a cure, for it is stated that whenever the treatment is suspended the paroxysms of coughing return with their original intensity and frequency.

THE SYMPTOMS OF ACUTE AND CHRONIC ARSENICAL POISONING.

According to the Paris correspondent of the *Medical Press and Circular* (July 10, 1889), at the Académie de Médecine, M. BROUARDEL read a very interesting paper on the "Symptoms of Acute and Chronic Arsenical Poisoning." First stage: Gastric derangement, mucous fever, vomiting, colic, etc. In chronic poisoning the vomiting is not painful, but frequent,—seven or eight times a day. Constipation is more frequently met with than diarrhœa. Second stage: Eruptions and laryngo-bronchitic catarrh. The cough is spasmodic, and sibilant râles are heard in the bronchi. The eruptions consist of epidermic exfoliations, and erythema of the eyelids and scrotum. Third stage: Headache and numbness in the lower extremities, with painful cramps, and, in exaggerated cases, severe pains of a lancinating character are felt, especially in the ankles. Fourth stage: Paralysis of the lower extremities, which seems to commence at the common extensors of the toes; in any case the paralysis persists the longest in these muscles. Convalescence from this intoxication is frequent, but very slow, at least when paralysis is present. Death supervenes frequently by the heart.

Means for recognizing Arsenical Poisoning.—The urine should first of all be examined, for the poison can be recognized in that liquid not only in a few minutes after its ingestion, but also when the patient has ceased taking it for many days.

As to the repartition of arsenic in the human body, DRAGENDORFF emitted the hypothesis that arsenic was substituted for phosphorus in the bony tissue, and recent analysis proved that no matter in which way the drug was administered, it accumulated very sensibly in the spongy osseous tissue, and fixed itself there, so that its presence can be detected in the cranial bones, and notably in the vertebræ after all trace of it has disappeared from the viscera. In the Havre poisoning case (referred to in our Paris letter), the presence of arsenic in the bones of the skull, the vertebræ, the skin, hair, and nails of the persons who succumbed, was detected with comparative ease.

M. OLLIER said that M. Brouardel had forgotten one symptom, which was frequently observed in arsenical poisoning, and that was bloody vomiting. The latter replied that the fact was possible, but he did not remember noticing any in the recent cases.

THE INFLUENCE OF PERMANGANATE OF POTASSIUM ON MENSTRUATION.

In the *British Medical Journal* for July 20, 1889, DR. W. STEPHENSON writes that his first impressions from the use of permanganate of potassium in amenorrhœa were unfavorable. But his subsequent investigations have confirmed the conclusions of Drs. Ringer and Murrell. Dr. Stephenson said that his experience extended over a treatment of one hundred and five cases in which reliable results were obtained.

In the present series the permanganate of potassium alone has been used. It was prescribed in the form of pill, containing two grains of the salt, with sufficient kaolin ointment; one pill three times a day after meals; in a few cases twelve grains a day were taken. Many of the patients continued to take the pills regularly for two and three months. In only three cases did they complain of any pain after the medicine, and in these reducing the number of pills per day or the dose in each was sufficient. His experience, therefore, is different from that of Dr. Döering, of America, who found that "the administration of the drug in doses large enough to be effective is accompanied by severe pain, which frequently necessitates a discontinuance of the remedy, and hence impairs its value as an emmenagogue." This result is explained by the mode of administration. He recommends it to be given in "capsules, taken midway between meals, and followed by large draughts of some pure mineral water." The drug is thus thrown rapidly in solution on the stomach, whereas the pills undergo very slow disintegration.

Amenorrhœa is the test which has mainly been used for the action of the permanganate, and, therefore, naturally leads to a condition

which tends to right itself. Unfortunately, it is deceptive. The greater part of the evidence adduced is, nevertheless, composed of such cases. The authors of the paper first referred to state: "Our most striking results have been obtained in young women between the ages of 18 and 25, who, from some accidental or trivial cause, such as catching cold or getting wet, have missed once or twice after having been regular."

Evidence of this character must be accepted with caution; and did the belief in the action of the permanganate rest on such alone, it would require a very large number of successive cases (not cases taken here and there) to eliminate the uncertainty that is inseparable from the affection. Two of the author's cases were instructive in this respect, for they both menstruated before they had taken the pills.

Dr. Stephenson states that he does not believe in emmenagogue remedies, and that such is not the action of permanganate of potassium, for he maintains that he has found it as serviceable in restraining the menstrual flow when in excess, as in promoting its recurrence when suppressed.

As regards the effect of the drug in amenorrhœa his investigations cover the following points: First, where menstruation has not been suppressed, but the intervals between the periods have been irregular, does the permanganate promote regularity? Secondly, where the periods have been regular, but the quantity has been scanty, does the permanganate increase the amount of the discharge? And, thirdly, has the remedy any influence in modifying the amount of suffering experienced at the periods?

An analysis of the one hundred and five cases gives the following results on these points: Of amenorrhœa, where menstruation had previously been fully established, there are twenty-two cases. Of these, the flow was re-established in twelve cases, and no such effect in eight; in two the remedy acted well at first, but on a subsequent amenorrhœa it failed. Of primitive amenorrhœa, or where menstruation had been imperfectly established, there are ten cases; in six good results were obtained, and in four none. In seven cases the interval was too long, but otherwise menstruation was natural; in five of these there was marked improvement, in two the character remained the same. In twenty-one cases menstruation was scanty in amount, and too long between the periods; in eleven there were good results, in ten no improvement. In eighteen cases there was very marked improvement in the amount of pelvic pains, and frequently the patients stated that they felt much stronger during the periods, and were not "so pulled down."

In estimating the value of these general results it must be remembered that in the inquiry the permanganate of potassium was prescribed indiscriminately, with the view of testing its action; the failures are, therefore, more numerous than they otherwise would have been had cases deemed most suitable been selected. Thus, a number of them were cases of chlorosis, where iron should first have been employed or given in conjunction with the manganese.

Dr. Stephenson further claims that permanganate of potassium is extremely useful in checking leucorrhœa, and in twenty-nine cases which were subject to menstrual headaches in only four of these was no relief obtained. Further, it is claimed, the permanganate will relieve ovarian pain, and of twenty-two cases in which ovarian pain was a special symptom, the relief is stated to have occurred in all to a more or less degree.

What appears to be an entirely new point, and one from which, from our point of view, is almost inconceivable, is the author's claim that in twenty-seven cases in which menstruation was in excess, either in time or in quantity, in two cases only was there no improvement in this condition under the use of permanganate of potassium. In fact, the author claims that the beneficial effect in this respect is even more marked and reliable than in the opposite condition of suppressed or scanty menstruation. Dr. Stephenson believes that this contradictory action may be explained by attributing the action of the drug to correcting the *constitutional* states which give rise to menstrual derangements, rather than to any specific effect on the uterine structures. Perhaps, also, some of the relief to menstrual suffering afforded by the permanganate is due to the improvement in vascular action.

BALSAM OF PERU IN PHTHISIS.

According to the Vienna correspondent of the *Medical Press and Circular* (July 10, 1889), PROFESSOR SCHNITZLER has for some time past been using balsam of Peru in cases of pulmonary phthisis with laryngeal lesions. It may be remembered that Landerer drew attention to the efficacy of this drug some time ago, but little has been heard of it since.

It may also be remembered that the drug acts differently on tuberculosis when injected directly into the veins than when given by the mouth. Dr. Schnitzler makes a solution of olei amygdalarum, mucilago gummi arabici, and chlorate of sodium 1 to 400, and in this form injects about .5 to 1 gramme of the drug. He advises the precaution of breaking up the oil globules every time before use, so that their dimensions are less than the blood-corpuscles. The results he has obtained from this form of treatment in tuberculosis appear to be satisfactory.

PINEAPPLE-JUICE IN BRONCHIAL CATARRH.

Dr. Flaschar recommends pineapple-juice as one of the best remedies for dissolving tough mucus secretion when obstructing the air-passages (*Journal de Médecine de Paris*, July 7, 1889). He claims that he has had remarkable success with this remedy in cases of chronic bronchitis, with insufficient expectoration and marked dyspnœa, while no accident or unpleasant result has ever followed its administration.

He prescribes it in doses of 8 or 10 teaspoonfuls at first, while later the quantity may be somewhat diminished. The method which he employs of preparing the juice is as follows: The fruit is cut in slices, which, after being sprinkled with sugar, are pressed in a glass vessel, then tightly closed. The vessel is then immersed in cold water, which is gradually heated to boiling,—a procedure which we should think would be apt to result in the explosion of the jar. The juice is, however, subsequently cooled, and is used as required.

SUBOXYGENATED AIR IN THE TREATMENT OF PHTHISIS.

At the Congress for the Study of Tuberculosis, which recently terminated its sittings in Paris, Dr. Valenzuela, of Madrid, read a paper on the "Curative Effects in Phthisis of Suboxygenated Air." The author advances the theory that in high altitudes the rarefied condition of the atmosphere necessitates greater functional activity in the respiratory apparatus, especially that portion formed by the thoracic parietes. As a given volume of the atmospheric air in high altitudes contains a considerably less weight of oxygen than air at the sea-level, to inhale the normal amount of oxygen increased respiratory activity is necessary, and to this and not to the greater purity of the atmosphere, nor to its dryness, is the beneficial effects of mountain air due. He found (*L'Union Médicale*, No. 45) that in Spain the deaths varied in proportion to the elevation; thus, in districts with an elevation less than one hundred metres above sea level the mortality equalled twenty per cent. of those suffering from phthisis; at an elevation varying from one hundred to five hundred metres the mortality was ten to twelve per cent. In localities of over twelve hundred metres above sea-level phthisis is unknown.

According to Mr. George Foy (*Medical Press and Circular*, July 10, 1889), at an elevation of two thousand metres, he found diphtheria, smallpox, typhus, whooping-cough, pneumonia, and dysentery, but never phthisis. Acting on his theory that suboxygenation was, by causing increased respiratory activity, the beneficial agent, Dr. Valenzuela constructed pneumatic chambers, in which, by the addition of carbonic acid gas, he could diminish the percentage of oxygen present, and so increase the respiratory effort above the normal; this condition he usually kept up for two hours at a time, and repeated the suboxygenated air treatment two or three times a day for some months, never less than two. He obtained the best results. Of five hundred cases in the early stage all recovered, and of one thousand cases taken at hazard, seven hundred and forty-eight resulted favorably; difficulty of breathing disappeared; the thoracic measurement increased; the weight of the patient was greater; and the urine had less uric acid and more urea.

Before introducing his method of treatment to the profession, the author tested it for eight years in his laboratory in Madrid, and for four years in his hospital.

Combining the vapor of iodine, iodoform, chlorine, sulphurous acid, eucalyptol, or any other medicated vapors, adds, in some cases, to the efficacy of the suboxygenated air. From Germany comes another remedy for phthisis. Drs. Miguel and Rueff, according to the *Pharmaceutische Post* for March, 1889, recommend the inhalation of the biniodide of mercury. They base their opinions on a long series of observations made at the bedside.

The result of this method of treatment, according to our contemporary, is a very satisfactory one; often after its first administration the cough is reduced, and the expectoration, even in individuals with large cavities, be-

comes reduced in quantity, and loses its offensive odor; night-sweats disappear, and the body gains in weight. Their method of employment is to dissolve 1 part each of biniodide of mercury and iodide of potassium in 1000 parts of distilled water. This solution is employed in the form of a spray at first only once daily, and later, when the patients have become accustomed to it, twice daily. If it is found that the spray irritates, the solution may be reduced one-half in strength without the result being affected, since it is claimed that this preparation of mercury will destroy bacteria in concentration of 1 to 40,000.

One of the chief conditions of success is to prolong the use of the treatment, which may be carried out for a year or more without evil effect to the patient.

On reading these accounts, the mind imperceptibly reverts to the recollection of the Pneumatic Institution, at Clifton, of Thomas Beddoes, of Shiffnal, who used "fictitious air" for the treatment of phthisis, and held that an excess of oxygen was the predisposing, if not the exciting, cause of the disease.

LAMINARIA IN STRICTURE OF THE ŒSOPHAGUS.

Professor Senator has recently stated that for about a year past he has used laminaria in stricture of the gullet with comparatively good results. A piece of laminaria is attached to the end of an ordinary œsophageal bougie, and for greater safety this is further connected with a string running through the whole length of the bougie. Different sizes are used according to circumstances. The instrument is passed into the stricture and left in position from half an hour to an hour, during which time the laminaria swells to a considerable extent. In one case it expanded from one to one and a half millimetre in the course of half an hour. The surface of the laminaria remains smooth, and does not injure the mucous membrane. In most of the cases in which Dr. Senator has tried this plan the stricture has been cancerous, and, as he says, although "by gradual and frequently repeated pressure a carcinoma may cicatrize and become atrophied, this very seldom happens." In a large proportion of his cases, however, the treatment produced very marked dilatation of the stricture, so that the patients after a certain time could swallow much better than before. In some instances there was no improvement, and Professor Senator confesses that at first his anxiety to dilate the stricture as quickly as possible made him apply the treatment without sufficient regard for the tolerance of the diseased parts. If due care is not exercised, the laminaria may swell so much as to cause great pain, and even difficulty in removal. The most favorable cases for the treatment are, of course, those of cicatricial stricture. Dr. Senator points out that laminaria may also be used with good effect in narrowing of other canals, and he relates one case of stricture of the rectum in which he tried it, but apparently with indifferent success.—*British Medical Journal*, June 22, 1889.

Reviews.

Diabetes, its Cause and Permanent Cure; from the Stand-Point of Experience and Scientific Investigation. By Emil Schnée, M.D., Consulting Physician at Carlsbad, etc. Translated by R. L. Tafel, A.M., Ph.D. English edition, revised and enlarged by author.

Philadelphia: P. Blakiston, Son & Co., 1889.

To the author the subject of diabetes presents but little difficulty. His work is dedicated to a prince of Sachsen-Weimar-Eisenach, and he knows all about the formation of sugar in the economy, and what it does when formed. He alone can bring order and certainty out of conflicting theories, and ascertain just where in the economy lies the fault. In these matters he is guided by the labor and research of others, giving the credit to Ebstein first and most of all. But he himself is a discoverer. With a true discoverer's innate modesty, we find (p. 31), "Herein lies the great mystery, never before discovered by any one, of the cause of diabetes; and here, according to my conviction, hereditary lues on the part of one of the parents, grandparents, or great-grandparents of the patient, has to be taken into consideration." In other words, he claims that while glycosuria is a transient condition, into which, from its very formation, any constitution under certain circumstances may fall. Diabetes "is never caused in that way;" it is "based upon a wrong composition of the protoplasm." To make us quite sure that he is talking about the real article,—the original old diabetes,—the author tells us something about it. "It is not a symptom;" a characteristic "is its freedom from fever;" "it is not infectious or contagious;" and we are glad the author has emphasized

this point, for now the awful dread of catching it will subside. No longer will diabetics be liable to quarantine, and be shunned as plague-stricken by their fellow-men. The efforts of Cl. Bernard, of Pavy, Schiff, Pettenkofer, and others seem to the author to have failed in reaching any cause, for "the real cause . . . the hereditary transmission of lues they did not discover." From this discovery it follows that the primary thing to be attacked in battling with diabetes "is not the formation of sugar, but the faulty composition of the protoplasm, and its inability to produce carbonic acid." For this, the author has proved in his first chapter, alone has the power of inhibiting the otherwise immense production of sugar by the economy. "The postulate, therefore, is the renovation of the entire protoplasm of the body." "My entire secret consists in restoring the equilibrium,—the balance in the 'change of substance.'" Thus we see why the author is so urgent in disassociating glycosuria from diabetes. No matter how long glycosuria, according to his idea of it, may exist, no matter if it leads to consumption and to death, "nevertheless glycosuria is not on that account diabetes;" and again, "I am acquainted with only one kind of diabetes, and this I treat as a hereditary disease."

All the "cures" hitherto made, according to our author, have been "glycosuria," which Carlsbad water may relieve and even cure. He alone has cured "real diabetes," and by his method "they remained thoroughly healthy." Nor are the numbers of cured trivial, since he gives a list of fifty-three patients, with their ages and sex, treated at Carlsbad and Nice from 1881 to 1884, while from 1884 to 1887 one hundred and sixty-five were treated. The author fails entirely in his efforts *to prove* that diabetes is derived from ancestral syphilis, but the reader must go over the collected evidence for himself. In the chapter on diagnosis the author gives a minute description of the "diabetic tongue," which may prove valuable, though little reliance can be placed upon its supposed identity with syphilitic psoriasis linguæ; in fact, the author drags for symptoms of his favorite "lues" with a very fine net. "Beauty spots, warts, pigment spots, white spots on the finger-nails, gouty deposits in the joints of the fingers and toes," are all to him "luetic." And, to finally clear the deck for action, we have two chapters on "Illusory Cures of Diabetes," all previous cures being "illusory," and upon "Statistics and Post-mortem Examinations," before we come to "Treatment of Diabetes." In this chapter the author asks the same question that the reader will be sure to ask, "Can defective protoplasm be made normal again?" granting that the author has stated a truth in attributing the disease to the cause, and has not merely used pseudo-scientific language to cover ignorance. How this is to be done we are told in this chapter. Still, after reading it, we are not sure that we have been made wiser. Certain sentences are suspicious. "In every particular case you have to individualize," and "in medicine you must guard against working by rote." True statements enough, but also excuses for failing to give us a clear, distinct account of how to renovate protoplasm. We learn that the skin must be cared for, the muscles exercised, Turkish baths and massage used, long breaths drawn, and many other useful things done, but still the protoplasm may be unchanged. Feeding is the basis of renewal. Feeding has been ere this the foundation of diabetic treatment, and the author gives us the diet-tables of Rollo, Bouchardat, Dickinson, Pavy, Cantani, Seegen, Düring, Frerichs, Ebstein, and draws from them his own conclusions. They all agree on certain points, and these the author brings out into prominence, but his own method is, he tells us, a "nourishment cure," rather than an "abstinence cure." Wonderful to relate, however, the author's "nourishment" is remarkably like his opponent's "abstinence." He seems to dread acids, and advises the diabetic to eat food "free from any particular acid," for which purpose he "prescribes a claret which contains but little sugar; also he "permits easily digestible articles of animal and vegetable food, which are free from starch." Further on he advises "chrome bread," which he explains as his own invention. Something, perhaps, like the "chrome buns" of Philadelphia notoriety. The formula, however, he gives. Saccharine, in his table, takes the place of sugar, and he rashly vouches that it "does not exert any injurious effect on the organism." For dinner the unhappy diabetic in our author's care is allowed only the regular diabetic regimen,—no starchy vegetables; and one wonders how he can call his dietary nourishing as opposed to the abstinence of others, until "snails" caught our eye. Our author allows the wretched diabetic—how wretched we had not realized before—to fatten on snails; and, though prohibiting acids, he advises "lemon sauce and cucumbers without vinegar," though allowing the

most acid wines, and he specially urges sour milk; in short, the diet-table of our author contradicts his claims, and is itself contradictory. For medicine, "Not a single specific medicinal remedy against diabetes has been discovered." Pilocarpine the author takes under his wing. He has used it, and "as a palliative medicine it has exercised a remarkable effect;" but, finally, the author introduces his own "combination method" with "extraordinary effects of both chromate of potassium and mercury, and, indeed, internally, as well as externally, in the massage." Internally he uses the "corrosive sublimate albuminate" of Bamberger's formula, also the "chrome-water," as used by Günze, of Dresden, after the carbonic acid has escaped, in addition iron and quinine as tonics. Alkaline waters, Carlsbad, or sodium bicarbonate, these are merely adjuvants. Here we have the author's discovery. Those who are convinced by his book will probably try it, but we confess that it wants the ring of truth. Possibly the translator has made things worse than they were originally. E. W. W.

Wood's Medical and Surgical Monographs. Published monthly, $10.00 a year; single copies, $1.00. Vol. I., Nos. 3, 4, 5, for March, April, and May, 1889. New York: William Wood & Co., 56 and 58 Lafayette Place, 1889.

These monographs deserve to grow steadily in the reader's estimation. The March number completes Vol. I., and contains monographs on "Neurasthenia, Antipyresis, and Antipyretic Methods of Treatment," "The Tongue as an Indication of Disease," "On the Treatment of Cystic Goitre," and "New Remedies from 1878 to 1888." The first and second articles are by Von Ziemssen. The monograph on "The Tongue" is by Dr. W. H. Dickinson, and is profusely illustrated with wood-cuts and colored plates. Its perusal will tend to restore interest in the organ whose importance as an indicator of disease has declined very much in the last thirty years. But it seems probable that with increased knowledge and more accurate observation it will again rise into prominence. Indeed, the time has already gone by when a diagnosis based too strongly on the appearance of this organ excited derision of a mild type from the more advanced practitioner. The monograph on "New Remedies" only errs in being too brief and in failing to include many remedies of popularity.

The April number contains two articles,—a short but excellent one on "Diabetes, and its Connection with Heart-Disease," by Jacques Mayer; and one on "Blennorrhœa of the Sexual Organs and its Complications," which is extensive, thorough, and very valuable. This is by Dr. Ernest Furger. This article contains all that is worth knowing, up to date, and discusses the whole matter of male and female infection, diseases of the tubes, views of Noegerrath, method of using the endoscope, gives us a very careful analysis of the various methods of urethral medication, and, in short, is a good modern textbook to have.

The May number, Vol. II., No. 3, contains two monographs,—one on the "Preventive Treatment of Calculous Disease and the Use of Solvent Remedies," by Sir Henry Thompson, F.R.C.S., and M.B., Lon.; and one on "Sprains, their Consequences and Treatment," by C. W. Mansell Monlin, M.A., M.D., Oxon. The latter article will prove of more general interest and use than the former, which appeals to the surgeon specially, while a more perfect knowledge of the method of causation, history, and management of sprains will prove of incalculable value to the practitioner at large and his patients. Especially interesting is the chapter devoted to sprains of the ankle-joint and injuries destructive to the integrity of the tarsal arch, neuralgic joints as after-effects of sprain, chronic synovitis and its treatment, and all the fashionable injuries, the "tennis elbow and the cycle leg" are discussed; in fact, one can hardly imagine a more instructive course of post-graduate reading than this series of monographs affords, so far as yet published.

E. W. W.

The Diagnosis and Treatment of Extra-Uterine Pregnancy. By John Strahan, M.D., M.Ch., M.A.O., Royal University of Ireland, etc. Jenks prize essay of the College of Physicians of Philadelphia. Philadelphia: P. Blakiston, Son & Co., 1889.

Any better proof of the wisdom of prizes for the stimulation of writing could scarcely be afforded than is offered by this volume. The trustees of the fund may be congratulated on eliciting at the first effort such a great contribution to the literature of extra-uterine pregnancy. Since the volume of Parry nothing so original and thorough has appeared, and since the day of Parry how badly the whole point of view has changed. How valuable Parry's work was Dr. Strahan, however, illustrates on nearly every page, and to those who remember him and his short but bright career, his quoted words but serve to show

how great would in all probability have been his subsequent career had he been spared to enter upon what may be termed the "epoch of gynæcology."

Dr. Strahan is no mere statistician, but an argumentative writer of great force and of a very attractive style; and, in fact, it is his exceedingly enticing style that gives the peculiar charm to his work. And if any subject admits of argument, of logic based on the premises of common sense and sound statistics, such a subject is extra-uterine pregnancy.

Concerning the extreme difficulty of diagnosis, the author takes the ground of Mr. Tait. All diagnostic means fail, and in the vast majority of cases the surgeon can only hope to operate on the occurrence of tubal rupture.

Having, however, diagnosticated the case before rupture, what is the best course? Is it puncture of the cyst through the vagina? is it intra-cystic injections of toxic agents, or electricity with or without puncture? or, finally, laparotomy? These questions the author discusses at great length and with such great clearness that the reader is fairly carried away, and yields ascent, willing or unwilling, to his views.

Probably the most valuable portions of the book are those which treat of diagnoses and of the methods of terminating pregnancy, with the operations at the various stages of the fœtal growth. The author throughout the book seems conversant with all the scattered literature of the subject, and his pages are filled with references and apt quotations. Certainly the book seems destined, for some time, at least, to be a standard work on the subject, and is of especial value from his exceedingly clear descriptions of the operative proceedings necessary in these cases. It is a book for every practitioner, since it deals with a condition likely to be met with anywhere, in the sparsely-settled country as readily as in the city, and which demands often instant interference, a condition where there is no time for consultations, no time to transport the patient to more scientific medical centres, but where the life of the mother always, and towards the end of pregnancy the life of the child also, may be saved by promptness from otherwise inevitable death. Hence the author appeals frequently to the simplicity and comparative ease of the operation demanded, and has spent much space in describing each step with great clearness; and, taking into consideration the fact that in all probability multitudes of women die of totally unsuspected tubal rupture, unsuspected both before and after the fatal event, we can hardly imagine a more useful work to be placed in the hands of the medical world. E. W. W.

PRACTICAL LESSONS IN NURSING: DISEASES AND INJURIES OF THE EAR, THEIR PREVENTION AND CURE. By Chas. Henry Burnett, A.M., M.D., etc. Philadelphia: J. B. Lippincott Company, 1889.

This is not intended as a deeply scientific work. Its place in the series of "Practical Lessons in Nursing" shows as much; but it is far over the heads of even well-trained nurses, and is an exceedingly useful, common-sense treatise on the ear and its diseases, carrying the practitioner as far in the matter as any but the professed specialist would care to go. If we might say so, it is aimed as much at saving the ear from wrong treatment as suggesting more proper methods, and in this field the author gives some excellent advice, and holds up to opprobrium the too ready methods of the "old family nurse" and the early traditions of our race on the subject. Evidently the care of the ear is better because more successful than its cure. We are glad to find Dr. Burnett coming out plainly on the subject of sea-bathing,—a subject on which many are absolute fanatics, who have elevated sea- and surf-bathing into a cult. How many lives it has shortened who took the reaction of insulted nature for the glow of health, but forgot the depression of the following hours, from which another plunge again revived them! The author gives some excellent advice on this subject, though, with a view to the preservation of his favorite organ, he doubts evidently whether we should ever bathe in cold water at all.

Another topic he touches on deserves remembering,—viz., cutting the hair short in winter, and the equally dangerous practice of guarding against subsequent cold by applications of bay rum, etc. In fact, as we read the author's words, we see how wrongly we all are doing in regard to our ears. It seems almost as though we were born with fundamental instincts driving us on to destroy our hearing whether we would or no, as if civilization were a failure indeed, for pocket-handkerchiefs incite us to blow our noses, which is dangerous, and decency to cut our hair, which is as hazardous, and a desire for cleanliness to bathe in cold water, which is suicidal; and, in short, life is one long struggle with vicious tendencies, which, while they, if indulged, make us cleaner, brighter, healthier, and happier, unfortunately threaten our hear-

ing. Still, if a little learning makes us thus unhappy, perhaps a little more will prove antidotal, and when we find the oculist urging us not to read for fear of blindness, and the dentist not to chew for fear of injurying the dental membrane, and the rectal specialist throwing out hints about the dangers of eating and so overworking his favorite organ, why, we get desperate, and we read by Philadelphia gas, which is the worst of gas, and chew gum and tobacco, and eat dinners, and plunge recklessly at the surf, and, after all, get along pretty well, unless we have been too careful, and put cotton in our ears, in which case we consult the aurist after some months of deafness, and he extracts it. Then in our burst of gratitude we thank heaven that there are aurists, and go out and do just as they advise us not to.

E. W. W.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF NEW YORK, YEAR 1889.
Published by the Society, 1889.

There are many papers of great interest in these "Transactions." An enumeration of them would occupy too much space. There is the paper of Dr. J. Leonard Corning on "The Limitations of the Influence of the Mind upon the Body," which is both excellent and timely, though no one in his senses will expect to hear any answer to Dr. Corning's appeal to legislative action to put a stop to the travesty on medicine called the "mind-cure," or the parody on science and religion called Christian science. Perhaps there are, as the writer suggests, some well-meaning and partially sensible people involved. Certainly there are occasionally some "good people" in the correct sense of the term; but the best way to deal with the matter will be to let it live its weedy life, and die when at last its votaries tire of it and turn to some new and more alluring "ism."

Of an allied character, but more complete in its argument and definite in its thinking, is Dr. T. D. Crother's paper on "Inebriety from a Medical Point of View." No one can controvert Dr. Crother's argument, or deny the validity of his statistics and inferences, but it is always well to bear in mind that all drunkenness is not "inebriety," as he uses the word. For inebriety is a disease, the outcome of a diseased inheritance; and the amiable and cheerful consumptive, whose Christian resignation is an edification to all believers, may be suffering no more and no less truly from inherited disease than her drunken brother, whose orgies serve to "point a moral" as effectually as her virtues "to adorn a tale."

"On Chronic Headaches," by Chas. L. Dana, M.D., appeals at once to those who suffer in that way. Dr. Dana bases his remarks on an analysis of two hundred cases of "functional non-migrainous headaches." He divides head pain into three groups,—headache, neuralgia, and migraine,—and gives his idea of the cause of each. This study of a very obscure subject deserves careful consideration, and the paper is much more practical than the standard treatises on the subject, where the reader is involved in a maze very soon, and acquires a headache in the effort to understand it. A writer of a short article, if he is a clear writer, is forced to be brief, and his argument makes a distinct impression on the mind. Among other therapeutic suggestions, the author gives chloride of ammonium in large doses—℥ss to ℥i—in the headache of neurasthenia. In his experience antipyrin has been more successful in men than in women. Menthol, gr. v, in hot water, is a favorite remedy, or menthol with antifebrin. In young children the author advises syrup ferri iodid. in small doses. The reviewer feels like adding that in obscure headaches of the neurasthenic type very small doses of phosphorus have in his hands proved exceedingly useful.

Dr. L. Emmett Holt writes a paper on "The Prevention of Summer Diarrhœa among Infants viewed in the Light of the Lesions," and bases it upon some observations made in two autopsies on young children who died of acute pneumonia and from a fall respectively, and gave no signs of bowel-disease during life. Of the frequency of follicular ulceration in children suffering from summer diarrhœa, the author gives some astonishing proofs, and from this draws the general conclusions of his paper. There are many other articles of interest in these "Transactions," which the reader must discover for himself. We are sure he will be well repaid for the effort. E. W. W.

ELECTRICITY IN THE DISEASES OF WOMEN, WITH SPECIAL REFERENCE TO THE APPLICATION OF STRONG CURRENTS. By G. Belton Massey, M.D., etc.
Philadelphia and London: F. A. Davis, 1889.

The author believes that his is the first attempt at a complete treatise on the electrical treatment of women's diseases. The claims of Apostoli, Englemann, and Laphthorn

Smith have been submitted to a thorough examination at his hands, since "scientific investigation takes nothing from hearsay evidence." The book contains a full description of the electrical apparatus necessary for the work, details experiments illustrating the physical qualities of galvanic currents, describes the intrauterine application of electricity, electro-puncture, the faradic current in gynæcology, the Franklinic current, non-caustic applications, general precautions in use of electricity in nervous women, the electrical treatment of fibroids of the uterus, hemorrhage, chronic disease of the endometrium, subinvolutions, displacements, and extrauterine pregnancy, besides many more allied topics. So that one sees at a glance the wide field covered by the author; but the book must be read by an electrical expert to realize the thoroughness and value of Dr. Massey's work. E. W. W.

American Health Resorts, with Notes upon their Climate. By Bushrod W. James, A.M., M.D., etc. Intended for invalids and those who desire to preserve good health in a suitable climate.
Philadelphia and London: F. A. Davis, 1889.

This is an ambitious compendium of what the author knows and what he has discovered that others know on the subject. It gives us a very large map of the United States, and a great deal of information about climate, rainfall, prevailing winds, hotels, etc., and may prove useful to the traveller in the absence of a good guide-book. Its size and shape totally prevent its being used as a reference-book while on a journey, though it might be carried in a trunk, and studied while temporarily resting in a hotel.

The author also appends a translation of a portion of Dr. Woeikof's "Die Klimate der Erde," relating to North and South America and the Atlantic Ocean. E. W. W.

The Physicians' Leisure Library. The Treatment of the Morphine Disease. By Dr. Albrecht Erlenmeyer. Translated from the German by E. P. Hurd, M.D.
Detroit, Mich.: Geo. S. Davis, 1889.

This is a portion of one chapter only of "the great work of Dr. Albrecht Erlenmeyer" on the subject, but the translator has exercised good judgment in giving the public the portion that he has, for there is widely prevalent a very false idea of the best method of breaking the morphine habit and effecting a cure. The author makes it very clear that neither the gradual process of "tapering off," nor the sudden absolute stoppage of the drug, is the best; but he himself endorses what he has named the "rapid" method,—*i.e.*, not an absolute withdrawal *in toto*, but a withdrawal in a few days, accompanied by the most absolute watchfulness. To effect successful cures the patient should be admitted to an especially organized sanitarium. A mad-house, on the one hand, a general hospital, on the other, are not fit places, nor can the cure be conducted to a successful issue in a private house. The author is evidently practically acquainted with his subject, and therefore his book will furnish an excellent guide in dealing with these very troublesome and unsatisfactory cases. E. W. W.

Exploration of the Chest in Health and Disease. By Stephen Smith Burt, M.D., Professor of Clinical Medicine and Physical Diagnosis in New York, Post-Graduate Medical School and Hospital, etc.
New York: D. Appleton & Co., 1889.

This is a convenient hand-book of physical diagnosis, brief and clear, with some very good original illustrations. The instruction given is sound and precise. The author, perhaps, might give the student too lax an idea of the importance of high temperatures, and lead to a disregard of thermometric warnings, but otherwise his book is to be commended in every way. E. W. W.

Quiz Compend, No. 11. A Compend of Pharmacy. By F. E. Stewart, M.D., Ph.G., Quiz-Master in Chemistry and Theoretical Pharmacy in the Philadelphia College of Pharmacy, etc. Based upon Professor Joseph P. Remington's "Text-Book of Pharmacy."
Philadelphia: P. Blakiston, Son & Co., 1886.

This book will no doubt prove exceedingly useful to aspirants for pharmaceutical honors and degrees. To the physician it will prove of slight interest, other than in recalling his own antegraduate efforts at mastering the subject, when, alas! he did not possess, perhaps, any such aid.

Electricity and the Methods of its Employment in removing Superfluous Hair and other Facial Blemishes. By Plym. S. Hays, A.M., M.D., etc.
Chicago: W. T. Keener, 96 Washington Street, 1889.

This is a very good guide for one desiring to enter upon the career of a "superfluous hair-remover." It is a jealous specialty, and demands all one's time, patience, and skill. It requires also good eyesight and a steady hand. Sixty hairs an hour is about the limit of speed. Some only get up to twenty, and find that hard pulling. As for returns, they come in slowly. It takes three weeks for the

hair that has successfully avoided or evaded epilation to make its appearance. But it appears in about from fifty down to twenty, or even ten, per cent.; in fact, this pursuit possesses a positive fascination almost equal to the chase, and seems adapted to those genial and gentle souls who shrink from the responsibilities of active practice. To such we recommend the book cordially.

E. W. W.

A Laboratory Manual of Chemistry, Medical, and Pharmaceutical. By Oscar Oldberg, Pharm.D., etc., and John D. Long, Sc.D., etc. With original illustrations.

Chicago: W. T. Keener, 96 Washington Street, 1887.

This is a very elaborate and thoroughly practical work, and differs from the average work on the subject in being intended for actual daily use. Its type is large and clear, and can be easily read while following its directions in the laboratory. To the practical pharmaceutical chemist we imagine this work, or one similar, is a necessity.

E. W. W.

Correspondence.

PARIS.

(From our Special Correspondent.)

Dr. Brown-Séquard's Reviving Injections — Chronic Arsenical Poisoning—Anise- and Fennel-Seed Oils not alike Therapeutically.

Dr. Brown-Séquard's strange experiments have been confirmed by Dr. G. Variot, whose testimony is all the more valuable that he frankly confessed he had but little faith in the method when he tried it in several cases which all previous treatment failed to benefit. And to make sure his patients were not influenced by suggestion, the medicine was before them simply designated as a strengthening liquor (*liqueur fortifiante*). Said Dr. Variot before the Paris Biological Society: "The liquid used in subcutaneous injections was prepared by bruising in 10 c.c. (2½ drachms) of distilled water a freshly-excised rabbit or guinea-pig's testicle, and after a few minutes' trituration, decanting the slightly bloody liquid from the solid particles. In each experiment 2 c.c. were injected under the skin, forty-eight hours elapsing between the injections. The first patient was a house-painter, aged 54, much emaciated by chronic lead-poisoning and general debility. On June 22—the man had been eight days in bed from much weakness—the first injection was given. For three or four hours some pain resulted, accompanied with a feeling of general uneasiness and stiffness of the limbs. But the same evening the patient felt unusually comfortable, remarking he was like a new man, livelier, stronger, and stimulated every way. The second injection, two days later, acted likewise, increasing the man's heartiness, sharpening his appetite, and causing erections long unknown. A third injection, on June 26, had substantially similar results. The second patient, aged 56, a man debilitated by long want and suffering, received successively three injections, the first and second with rabbit's and the third with guinea-pig's testicle macerations. The effects were, excepting the erections, much like those observed in the case preceding. The third was a man aged 68, just recovering from an attack of pulmonary congestion and bronchitis, and for years subject to bladder-troubles, due to enlargement of the prostate. The patient kept to his bed most of the time, felt very weak, and ate but little. On June 24, two injections of rabbit's maceration were administered. For several hours rather sharp pain and great uneasiness were experienced, but the next day the man said he began to feel the strengthening liquor, enjoyed a good walk, and thought himself strong enough to practise with the dumb-bells as when he was 20. On the 26th he woke up more hungry than he had been for years, and remarked he wanted to grow strong as soon as possible, so as to undergo the operation for his bladder affection. A second injection, on June 26, of guinea-pig's maceration, caused a continuation of the same effects, and during the night of the 27th an intense erection. He expressed himself highly satisfied with the treatment. From the foregoing experiments I think the following conclusions may fairly be drawn: 1. The injections are, perhaps, painful, but in no way dangerous. 2. The febrile excitation, suggested by Dr. Féré, will not suffice to explain the phenomena observed. 3. After the first injection, the subsequent ones, although still painful, no longer cause general uneasiness. 4. The positive effects are a general stimulation of the nervous system, increase of muscular strength, regulation of the visceral and digestive functions, and some cerebral excitement. Genesic stimulation is not a constant result. My experiments so far I consider too few to enable me to absolutely

adopt Dr. Brown-Séquard's theories, neither do I feel disposed to contradict them. But I do believe the investigations deserve to be pursued on further, with strict scientific precautions." To which Dr. Brown-Séquard at the same meeting replied that Dr. Variot's observations fully confirmed his own, and the more so that the experiments were made with patients unaware of the nature of the medication. Unlike himself, who knew what he was using on his own person, the men only thought some strengthening preparation was administered, and consequently could not have been influenced by any sort of suggestion, always to be feared when dealing with nervous phenomena. He would, however, take some exceptions as to the *modus operandi*. "In the first place, the maceration liquor should be filtered, not merely through paper, but through a Pasteur's porcelain filter. Although no harm resulted in the instances related, to neglect this precaution is to run the danger of septicæmia. Next the choice of the animal is of some importance, the guinea-pig being preferable to both the rabbit and the dog, as with the first there is a risk of inoculating worm eggs and with the second hydrophobia, unless the animal has been observed a good while, in which case it may present some advantages. And, lastly, as regards the cases wherein the injections are likely to be beneficial, they are indicated not only in senile debility, but also when weakness originates from seminal losses, testicular troubles, or venereal excesses, especially during old age." Thus ended a discussion which here greatly interests the medical profession. As to the general public, always ready for a joke, they characterize the situation by the common saying, "Le docteur nous pose un lapin," which corresponds to the New York slang, "He is giving us a kid," with the advantage of mentioning the rabbit.

There is probably but little new to be said nowadays about acute arsenical poisoning. With the chronic intoxication, however, much still remains to be learned. Within less than a year two conspicuous instances of the more insidious form of poisoning have occurred here, and attracted considerable attention. In the first, which happened at Hyères, near Toulon, arsenious acid somehow found its way into the wine supplied by a large vintner, the Comte de Villeneuve, to a whole region, and caused many deaths and numberless accidents. It never was ascertained how or by whom the poison was introduced into the beverage, but the count, as the proprietor, was held responsible, and for the technical offence of "homicide through imprudence," sentenced to a fine and damages. The other case occurred in a pharmacy at Havre, where, in the space of eighteen months, three persons, including the pharmacist, M. Decamp, and his wife, died of arsenical poisoning, and every one employed on the premises, or only taking a meal there, became dangerously ill. The head clerk, Pastré-Beaussier, was accused and put on trial, because he alone all the while kept in robust health, and the accidents ceased when he left. But as nothing more could be proved against him, he was acquitted by the jury, and the tragedy remains as mysterious as ever. Drs. Brouardel and Gabriel Pouchat, who as experts were connected with the judicial investigations of both affairs, have this month read before the Academy of Medicine a most instructive communication respecting chronic arsenical poisoning. Basing their remarks on the few data already known, but chiefly on their own observations, they have established the following symptomatology in regular order: 1. Digestive troubles, which are usually the first to appear. These sometimes consist in simple uneasiness and dyspepsia, but often present the symptoms of a mucous or even typhoid fever, as occurred in some of the Havre and Hyères cases. Contrary to what occurs with acute poisoning, the vomitings are painless. 2. Eruptions and laryngo-bronchial catarrh. At Hyères, such was the frequency of catarrh that the physicians attributed it to an epidemic of spasmodic influenza. The same was observed in one patient at Havre, and in both places intense coryza, cutaneous eruptions, and squamous exfoliations were noticed. In two instances nails fell off. 3. Nervous troubles. Intense cephalalgia is common, and so is loss of sensibility, accompanied with either numbness or itching. For instance, a child would say he felt butterflies creeping up his back, and a drug clerk take off his shoes behind the counter, and strike the soles of his feet with a spatula to get the blood to circulate. 4. Paralysis. This last stage, which is sometimes absent, was more especially studied by Dr. Marie, formerly the head of Dr. Charcot's clinic, and it was owing to his special training that the experts were enabled to decide on an arsenical poisoning before autopsy had settled the point. The symptoms are characteristic, and were described with minute accuracy. Unfortunately, the

passage is too lengthy to be given in full, and would be almost useless if abbreviated. To conclude the medical side of the question, the termination should be considered. A cure often ensues when the symptoms have not reached the last stages, but it is very slow when paralysis has become established. A whole year may then be necessary. Death mostly results from heart-troubles. In the case of pharmacist Decamp, his physicians had diagnosticated infectious endocarditis. His servant, Maurice, in the full paralytic period, had left the fatal house six weeks when she suddenly died in the hospital. Yet none of the victims proved to have any valvular lesion of the heart. Death may also be the consequence of renal or muscular alterations, and take place even after all poison has been eliminated. The chemical aspect of the question is no less important and instructive. In cases of suspected chronic poisoning, Drs. Brouardel and Pouchat strongly advise to examine the urine, as the analysis can be performed without awakening any suspicion, and the arsenic can be detected long after the poison has been administered. So slow is the elimination that in one instance arsenic was found in the urine of a patient who had been treated with Fowler's solution, forty days after the medicine had been stopped on account of dangerous symptoms. Another method, also practicable during the patient's life, is to analyze the hair. Under some pretext it can be cut off without exciting any remark, and in case of chronic poisoning, arsenic will easily be detected. One milligramme was found in one hundred grammes of Mme. Decamp's hair, and one or two in her husband's hair and beard, weighing forty grammes. As regards post-mortem examination, after acute poisoning, arsenic, as is well known, will be mostly found in the viscera, but in chronic intoxication the poison is to be looked for elsewhere. It will be found accumulated in the spongy tissue of the bones, especially the cranium and vertebræ, the scapulæ, etc. The hair, nails, and skin will also retain it, and likewise store it for a considerable period after the last dose has been administered. Such are the important conclusions arrived at after a varied and extensive experience with those now celebrated cases, and corroborating experiments made on animals.

That similarity of chemical composition will not always entail identity of therapeutic properties has long been known. Another interesting instance of the fact is the difference between fennel-seed and anise-seed oil, which has just been pointed out by Drs. Cadéac and Albin Meunier, of the Lyons Medical Society. Chemically, the two oils are isomeric, and formed of a hydrocarbon isomeric with turpentine, and an oxygenated oil oxidizable into aldehyde and anisic acid. Their flavor is so nearly alike that both are used indifferently for flavoring cordials and absinthe, as well as in carminative mixtures. Yet their therapeutic properties are not at all the same. Drs. Cadéac and Meunier have, on experimenting, found the following differences. Externally, oil of fennel is less irritating than anise. When applied pure, oil of anise will cause on human skin a severe papular eruption, lasting fifteen or twenty days, while the effect of fennel oil will under the same conditions be evanescent and scarcely appreciable. In therapeutic as in poisonous doses, both oils present two distinct periods, —one of excitation, the other of depression. In medicinal doses, the first period with oil of fennel is rapidly developed, well marked, and lasts about an hour; with oil of anise, on the contrary, the excitation is slight, uncertain, and barely lasting more than a few minutes. Both in large doses bring on epileptiform convulsions, but fennel alone causes a curious premonitory symptom, consisting in the powerful tendency of the subject to walk backward. Such a phenomenon is never observed with oil of anise, and larger repeated doses are necessary to obtain the epileptiform effects, which never fail to appear with fennel. Everything being considered, anise should be classed with the soporifics and fennel with the excitants. Again, as a carminative, fennel is more powerful; it will cause sudden and violent intestinal contractions and abundant defecation, while anise is milder and operates painlessly. Both increase the appetite and promote digestion, and both augment the bilious secretion without affecting the kidneys; but fennel powerfully contracts the stomach, and is liable to give cramps. In lethal quantities fennel kills by stopping the heart, and anise by stopping the respiration. Their poisonous doses are also different. With oil of fennel, 12 grammes (3 drachms) sufficed to kill a four kilogramme dog in four and a half hours; with oil of anise, 27 grammes (7 drachms) were necessary to kill a six and a half kilogramme dog in twenty hours. And, finally, fennel-seed oil is a more efficient antiseptic, as was proved by experiments with various microbian liquids.

PARIS, July 19, 1889.

THE LATE JAMES E. MORGAN, M.D., OF WASHINGTON CITY.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—I ask brief space for an expression of sincere regard,—an humble but honest tribute to the memory of Dr. James Ethelbert Morgan, Emeritus Professor of Materia Medica in the Medical Department of the University of Georgetown, District of Columbia, who died June 2, 1889.

In the antebellum days Dr. Morgan was my preceptor, physician, and friend. Four years of such relations with such a man could but impress any one; the after-time could alone demonstrate to me the inestimable value of his teachings, the priceless beneficence of his example. As memories of all this—his timely words so fitly spoken, his almost stealthy but many and telling acts of kindness—come trooping to me at thought of his lamented death, I tide insensibly into seeming eulogy while aiming to speak the simplest truths of this grand man. Clear-headed and great-hearted, earnest and honest, courtly and brave; as a physician, thoughtful and wise; as a man, just, generous, and true, he was in all else superior to most men. In these, his distinguishing traits, he was the peer of any. In the name of it all came his abundant success as physician and teacher. As a logical sequence, there followed the love and respect of all who were so fortunate as to really know him. Upon a field and at a time when brainy men, no less than now, were the rule at the national capital, he went promptly to the front, and by sheer force of God-given fitness, solid acquirements, and the invincible magnetism of a true nobility, won, held, and now transmits a name of which those who bear it may well be proud.

As the generations come and go, it now and then falls out, through a generous mood of nature or the hidden purpose of an all-wise Being, that, even in an era of overproduction in all that is bright and good, some one figure outranks and compels admiration where 'twere seemingly invidious to discriminate. So it was of Dr. Morgan, at the time of which I write, among those for whom I speak,—his students and early friends of the class of 1860–61 at the University of Georgetown, District of Columbia. Many there were of his compeers, bright in genius and generous of soul: there was but one Morgan, in our eyes the shining exemplar of every manly impulse, and comparable only to himself. In the fullest and best sense he was the student's, the young man's, friend. As such I valued and honored him, beg thus to speak of him, not in mere eulogy, but in earnest terms, befitting his merits.

Truly the world is brighter and better for the lives of such men,—lives which not only illumine the coming track, but in their reflex throw a mellow tint over the dark and rugged pathway of personal experience, bringing into relief here and there living oases in an otherwise dreary waste.

Very respectfully,

A. G. BROWNING, M.D.

MAYSVILLE, KY., June 30, 1889.

TREATMENT OF YELLOW FEVER.

To the Editors of the THERAPEUTIC GAZETTE:

GENTLEMEN:—Will you please publish in your next issue the following extract from a letter just received from Dr. Sollace Mitchell, of Jacksonville, Fla., relating to my paper on the treatment of yellow fever, published in the May number of the GAZETTE:

"In speaking of the cases on bichloride *without* the soda (page 302, bottom of second column), you quote me as having 'twenty-five recoveries from black vomit,' whereas it should be FIVE. I do not know how I could have made the mistake in writing out the report for you."

By making this correction you will oblige.

Yours truly,

GEO. M. STERNBERG.

HAVANA, July 13, 1889.

Notes and Queries.

SULPHONAL AS AN HYPNOTIC IN INSANITY.

In an article on sulphonal as an hypnotic in insanity, DR. SAMUEL GARNIER, in the *Annales Medico-Psychologiques* for January and March, 1889, reports at length upon its action in seventeen cases, and concludes that—

1. Sulphonal is an hypnotic of most remarkable intrinsic value in cases of insanity. In nearly every case of insomnia sleep was produced by doses varying from 2 to 5 grammes.

2. It proved efficacious in cases in which paraldehyde, urethan, chloral, and hypnone had invariably failed to act.

3. The advantages of sulphonal in the in-

somnia of the insane are: the nature and amount of sleep procured by the doses mentioned; the facility in administering the drug by reason of its freedom from taste and odor, and also the fact that it has no appreciable effect upon the respiration, circulation, or digestion.

4. It should be stated in regard to its action upon digestion that as in 5.5 per cent. of the cases it excited vomiting, and in 17.7 per cent. slight diarrhœa, its use is contraindicated when these phenomena appear.

5. The use of sulphonal is sometimes attended with vertigo and difficulty in keeping the equilibrium, the patient appearing in this respect as if intoxicated. It may possibly be contraindicated in the congestive forms of insanity.

6. The fact that it had a diuretic effect in 17.7 per cent. of the cases should be borne in mind when administering it.

7. Its calmative action by day is wanting even after a large dose, and if produced it is usually only a somnolence induced the day following the administration of the drug, a condition it is well to avoid by reducing the dose.

8. After divided doses, in the single instance in which it was so administered, no sedative effect resulted by day and scarcely any at night.

9. About one-half of the cases to which sulphonal was administered only on alternate days were comparatively restful during the intervening nights.

10. In sane subjects, sulphonal appears unquestionably to provoke and prolong sleep, as well as to render it more profound. The phenomena attending its use are few and of little consequence. It is indicated in all cases of nervous insomnia.—*Boston Medical and Surgical Journal*, April 18, 1889.

POISONING BY ROBURITE.

Dr. Ross reports several cases of poisoning by roburite,—a new explosive agent used for blasting in coal-mines, and the chief constituent of which is di-nitro-benzol. The following is a brief account of the most typical of the half-dozen cases recorded in the paper before us. The patient was aged 42; he had been a miner for many years; had always enjoyed excellent health, and had always been a temperate man. Five months previously he had commenced using roburite, and soon noticed smarting of his eyes and face. This was followed by headaches, and, in about two months, he began to complain of numbness in his finger-tips and toes, shortness of breath and palpitation; more recently he had suffered from shooting pains in his legs, his grasp had become feeble, and his legs felt heavy and weak. He had lost flesh, become drowsy and apathetic, and his urine was sometimes very high-colored. He was a well-built man, face extremely pale, lips of a bright-blue tint. His fingers and toes felt numb, but there was no affection of cutaneous sensibility. The intrinsic muscles of his hands were somewhat wasted, and his grasp was not what it should have been. The patient had lost all spring and elasticity in walking, but his feet did not drop. The patient complained of twitchings of the legs, especially when he was in bed; the knee-jerks were absent; the plantar reflex was normal, the cremasteric absent, and the patient stated that he had lost all sexual desire. The special senses were unaffected. His field of vision was not contracted, and his color perception was normal. The urine was high-colored, containing a deposit of pink urates, and a trace of bile; his conjunctivæ were slightly jaundiced. His blood was examined with the spectroscope, and it was found that the two bands to the violet side of the D line were not reduced to one on the addition of ammonium sulphide so quickly as in the blood of a healthy man. He rapidly improved when he desisted from his occupation. Dr. Ross points out that the nervous phenomena—the muscular weakness, loss of knee-jerks, etc.—must be referred to peripheral neuritis.—*London Medical Recorder*, May 20, 1889.

PERMANGANATE OF POTASSIUM PILLS.

Two correspondents have recently called the attention of the *Pharmaceutical Journal and Transactions* to the value of lanolin as an excipient in making pills of potassium permanganate. Ernest W. Gough says, in this respect: "As far as appearance goes the pills turned out all that could be desired. I kept a dozen to see if any change took place, and, as far as I can see, none has occurred. The pills were varnished with sandarac and alcohol varnish (Martindale). I have not seen any note about lanolin being used before for this purpose.

"Perhaps some of your readers will be able

to say whether any decomposition is likely to occur if kept any length of time. The total weight of the mass was twenty-nine grains, the formula used being—

> "Potassium permanganate, gr. xxiv;
> Kaolin, gr. ii;
> Lanolin, q.s.

"The pills, I may say, are comparatively hard, and retain their shape perfectly."

J. H. MILLER hit upon the same combination, and wrote a communication to the same journal, from which we extract as follows:

"As the pills I have massed with lanolin have only been made a comparatively short time, it remains to be seen whether the new method is equal to kaolin and soft paraffin in preventing decomposition, but they are still, as you will see, in very good condition. As an excipient, it is simplicity itself, and exceedingly easy to work, ordinary anhydrous lanolin, in the proportion of 1 to 10 of permanganate, turning out a beautiful, perfect pill, only half the size of those made by the old method, and without any trouble."—*National Druggist*, July 1, 1889.

DANGEROUS CHLOROFORM.

Some chloroform obtained from a highly respectable German firm having aroused the suspicions of operators by the frequency with which patients anæsthetized with it presented grave symptoms, PROFESSOR MENTHIN, of Warsaw, undertook to examine it, along with a number of chloroforms obtained from other firms. The results were that not a single sample entirely answered the tests of the Russian Pharmacopœia, which are somewhat stringent, though less so than those of the French Codex. Professor Menthin—whose article is published in the *Vrach*, giving details and names of the firms from which the different samples were obtained—found that all the specimens left a residue on evaporation, some of these residues being evidently of a very prejudicial character, causing headache and giddiness on prolonged smelling. One of them smelt at first like nitro-benzol with an admixture of tobacco, the odor changing in two days to one like benzoic acid. When heated, this residue gave off an odor resembling burnt india-rubber. One of these samples came from a British firm, and appears to have been by far the best of them all, thirty-nine cubic centimetres leaving only a residue weighing .0001 gramme, and having a transitory smell of malic ether; whereas forty-nine cubic centimetres of one of the German specimens left a residue weighing .0022 gramme, and of a peculiarly offensive character. Professor Menthin's investigations would seem to offer some explanation of the extreme care taken by some of our continental brethren in regard to the use of chloroform. If much of what is used is as impure as some of the specimens referred to, it is scarcely to be wondered at that the results are sometimes disastrous. The specimen which was the immediate cause of the investigation is stated to have produced in no less than half of the patients such dangerous symptoms that its administration had to be discontinued. To all appearance, however, it was perfectly good, having a specific gravity of 1.487, neutral reaction, containing no free chlorine, and not undergoing any change of color when mixed with hot sulphuric acid and left to stand for twenty-four hours. The sequel, of course, shows that these preliminary tests are very insufficient.—*Lancet*, July 6, 1889.

HYDROXYLAMIN.

Hydroxylamin is a substance which has recently been attracting a good deal of attention as a substitute for pyrogallic acid and chrysarobin in the treatment of diseases of the skin, being possessed of all the good qualities of the former substances without their inconvenience.

Hydroxylamin was discovered in 1865 by W. Lossen by reduction of nitric acid as a basis analogous to ammonia, its chemical composition being NH_2OH. It is known only in aqueous solution and in its salts. It may be considered as ammonia, in which one atom of hydrogen is replaced by hydroxyl.

$$N\left|\begin{matrix}H\\H\\H\end{matrix}\right\} \text{ ammonia } N\left|\begin{matrix}OH\\H\\H\end{matrix}\right\} \text{ hydroxylamin.}$$

The most important among the salts of hydroxylamin is hydrochloric hydroxylamin or hydroxylammonia chloride: NH_2OHHCl. It appears in well-developed, colorless, strongly hygroscopic crystals, easily soluble in water, glycerin, and alcohol.

Hydrochloric hydroxylamin, according to Lossen, is prepared by reducing nitric acthyl-ether with granulated tin. According to Maumene it is obtained by the action of hydrochloric acid and tin on a solution of nitrate of ammo-

nia. According to Ludwig and Hein, it may be obtained by a current of oxide of nitrogen passing through a mixture of hydrochloric acid and granulated tin. The solution obtained by either of these methods is decanted from the tin which has remained undissolved; it contains hydrochloric hydroxylamin, in conjunction with chloride of ammonia, chloride of tin, and chloruret of tin.

On account of its present low price, hydrochloric hydroxylamin has been recommended lately as a reductive in photography and analytical chemistry.

Hydrochloric hydroxylamin may, according to its preparation, contain free hydrochloric acid, iron,—from the tin,—chloride of ammonia, and chloride of barium.

In the *Pacific Record of Medicine and Surgery*, March 15, 1889, DR. P. J. EICHHOFF recommends its use in solution of 1 part of the hydrochlorate of hydroxylamin and 50 parts each of alcohol and glycerin, to be applied externally. With this solution the dermic parts under treatment may be brushed from three to five times daily, after washing them thoroughly with potash soap, this form being preferred by the author to an ointment from the fact of its passing more readily into the skin. The author states that he has treated in this way five cases of lupus vulgaris, five cases of herpes tonsurans, and one case of sycosis, the effect in lupus being especially encouraging.

NOTE ON THE DILUTION OF COW'S MILK IN INFANT FEEDING.

The following may be of interest as having a bearing on Dr. Rotch's article on this subject, published in the *Pharm. Journ.* for March 2, page 706. MR. GEO. SMITH, in September, 1886, had occasion to consider this question in his daughter's case, owing to the mother's deficiency in milk. The food used as a substitute on that occasion has proved so successful in more than one case that it merits recording (*Pharmaceutical Journal and Transactions*, July 6, 1889).

The formula is mainly based on a process devised by Professor Frankland in rearing one of his own children (*vide* "Experimental Researches," pp. 843, 844).

In his paper (published December, 1854) Professor Frankland gives the percentage amounts of the different constituents of human, ass's, and cow's milk, as follows:

	Woman.	Ass.	Cow.
Casein.....	2.7	1.7	4.2
Butter.....	3.5	1.3	3.8
Milk-sugar.....	5.0	4.5	3.8
Salts.....	.2	.5	.7

These figures for human and cow's milk differ in several respects from the averages deduced from a wider range of analyses which are quoted by Mr. Thos. Maden in a paper published in the *Pharm. Journ.* for March 23 (pp. 768, 769), the most notable differences being those of sugar and fat; but on referring to the minimum and maximum figures found by Professor Leeds, from analyses of eighty samples of human milk from different sources, it will be seen that those given by Professor Frankland provide him with a basis for a formula which produces a fair imitation of human milk from that of the cow.

In this formula Professor Frankland takes no account of the differences in coagulable and non-coagulable albuminoids existing in each of the respective milks. His process practically consists in the precipitation (by means of rennet) of one-third of the casein from fresh cow's milk, and the addition of one-third more milk-sugar, but Mr. Smith found this somewhat tedious, except to a specially trained person. The process of dilution with water was adopted because it was simpler and would enable the food to be prepared in a few minutes whenever it was required.

Taking Professor Frankland's figures for the average of fresh cow's milk, as quoted, it will be seen that when it is diluted with water, in the proportion of 3 parts of the former to 2 parts of the latter, the average amount of constituents is modified as follows:

Fresh cow's milk 3 parts, water 2 parts.
Casein, 2.52 per cent.;
Fat, 2.28 per cent.;
Sugar, 2.28 per cent.;
Ash, .42 per cent.

From these figures the writer compiled the following formula.

The albuminoids, fat, and milk-sugar are by calculation made to approximate as nearly as possible to the average of these constituents in human milk.

Finely ground oatmeal ℥¼, gradually increasing to ℥ss.
Fresh butter, ʒi;
Milk-sugar, ʒii;
Fresh cow's milk, f℥vi;
Pure water, f℥iv;
Salt, gr. v, or a sufficiency.

Mix gradually the water with the oatmeal, milk-sugar, and salt, so that no lumps are formed in the mixture, then

add the milk and butter, and heat to the boiling-point in a clean, enamelled saucepan. The product should be made up to the measure of half a pint, if necessary, and given lukewarm with a spoon when required.

The oatmeal was introduced as a useful attenuant, and it has been found to act as a laxative, and also as a direct fat and heat producer in the process of digestion. The process of feeding with a spoon is at first troublesome, but it is to be preferred to the use of a feeding-bottle, as, if care be taken to have all the vessels employed scrupulously clean, the infant will enjoy an immunity from thrush (*Oidium albicans*), diarrhœa, and other diseases that follow in their train.

A CASE OF POISONING BY THE OIL OF HEDEOMA (PENNYROYAL).

In the *Boston Medical Journal* for May 30, 1889, DR. U. O. B. WINGATE writes that on November 20, 1888, he was summoned to see a patient said to be in a fit, and found a woman, about 20 years of age, lying on a lounge and wholly unconscious; pulse small; respiration very quiet; extremities cold; pupils moderately dilated; no froth in the mouth; could not be aroused. A neighbor present stated that the patient had experienced some domestic trouble that morning, and on hearing a noise she came in and found the patient on the floor, where she had apparently fallen from a chair. No one was in the room at the time she fell.

This was all the history that could be obtained, with the exception that the patient was supposed to be about four months advanced in her first pregnancy. Suspecting hysterical causes, on account of domestic trouble, Dr. Wingate applied digital pressure over the supraorbital nerves. In about a minute convulsive movements of the face began, quickly followed by a general tremor over the entire body, resembling a severe chill; then the body gradually and methodically assumed the position of extreme opisthotonos, the patient resting entirely on the occiput and heels. The arms, hands, and fingers became strongly flexed, and the whole body was in a rigid tonic convulsion. In about a minute the muscles relaxed, the relaxation lasting about two minutes, when another convulsion of the same character came on. By this time Dr. Wingate had administered gr. $\frac{1}{4}$ morphine sulph. and gr. $\frac{1}{120}$ atropine sulph. subcutaneously. The patient had no more convulsions, but soon vomited, and began to answer questions. She then stated that at 10 A.M. that morning she had taken a teaspoonful of the oil of pennyroyal and a half-teaspoonful of the fluid ext. ergot at a single dose, with the object of procuring an abortion. She was put to bed, heaters applied, and given as much milk as she could be made to take. She talked incoherently for a few hours, complained of great lameness in the muscles of the neck and back, and also of the flexors of the arms. The next morning she was sitting up; had some pain in the back, but no uterine action was provoked.

The toxic symptoms did not appear until about one and one half hours after the drug was taken. This slow action is also true of other oils, especially of the oil of tansy. Dr. Wingate adds that three months later he saw the patient, and she was then well advanced in her pregnancy.

MANDRAGORA ALKALOIDS.

Some of the uncertainty that has hitherto existed as to the active principles of mandragora root appears to have been cleared up by a recent investigation by HERR AHRENS, who reports that he has separated two basic substances that are probably isomers of hyoscyamine (*Annalen*, ccli., 312). The residue from the evaporation of an alcoholic extract of the roots was treated with acidulated water, the solution heated with potassium carbonate in excess and then shaken with ether and the ether evaporated, when a deliquescent alkaloidal substance was left, which when dried over sulphuric acid resembled a brittle resin. When neutralized with sulphuric acid it formed a sulphate crystallizing in white scales, a solution of which dropped into the eye dilated the pupil. Analysis of the gold salt gave results to the formula $C_{17}H_{23}NO_3HCL$ AuCL, or the same as that of hyoscyamine, atropine, and hyoscine. But although the gold salt had much of the external appearance of hyoscyamine gold salt, and a melting point only six or eight degrees lower, the properties of the other salts studied differed widely from the corresponding salts of hyoscyamine, and moreover the new substance was not converted into atropine by prolonged contact with alkaline liquor. Herr Ahrens is therefore convinced that the substance is a new isomer of the belladonna alkaloids and has named it "mandragorine." The press residue left after the extraction with alcohol was then treated with acidulated water and the aqueous solution supersaturated with potas-

sium carbonate was shaken with ether, which left on evaporation an oily base that did not crystallize over sulphuric acid. A solution of the sulphate of this substance, which could not be obtained crystalline, when applied to the eye also dilated the pupil. The mercuric chloride, platinochloride, and gold double salts were obtained crystalline; but the quantity available was too small to allow of the determination of its composition, although Herr Ahrens thinks it is probably another isomer of the belladonna alkaloid.—*The Pharmaceutical Journal and Transactions*, June 8, 1889.

CASES OF WILD PARSNIP POISONING.

At the meeting of the Maine Medical Association, recently held at Portland, DR. G. A. PHILLIPS reported several cases of wild parsnip poisoning (*Boston Medical and Surgical Journal*, July 4, 1889). Botanically and in physiological action this plant resembles the water-hemlock. It is the *Pastinaca sativa* of Gray.

The poison takes effect in direct ratio to the rapidity of the digestive powers in children, about two hours after the ingestion of the root. The symptoms are flushing of the face, mental dulness, followed soon by twitching of the extremities and severe convulsions, with coma, pupils widely dilated, respiration shallow, pulse weak, rapid, and thready, tongue dry and swollen. Treatment was by opium and prolonged etherization, after emetics and enemas.

Death occurs in cases not promptly relieved. Strong infusion of the root injected under the skin of a cat had no other effect than to widely dilate the pupil.

A CASE OF POISONING BY NITRO-BENZOLE.

DR. REYNOLDS reports the following case: F. O'B., aged 25, was brought to the Manchester Infirmary at 6.50 P.M. on March 19. He was quite unconscious, and of intensely blue color, and all that was known about him was that he was employed at some aniline-works, and that he had been sent home that morning sick, with instructions that he was not to be allowed to go to sleep. The case was recognized to be one of poisoning by nitro-benzole, and the patient was at once admitted, when the following note was taken: "The patient lies easily on his back, and is quite comatose, appearing, however, rather as if in a deep sleep. On applying a strong faradic current to the face he responds merely by a few grunts and grimaces. All the limbs are flaccid and helpless, the tendon reflexes being increased in some measure. The extraordinary feature of the case is the most intense blueness of the whole body, particularly the hands, feet, face, and mouth. The eyes are closed, the pupils normal, reacting to light. The pulse is 100, regular; the respirations quiet, 32, markedly Cheyne-Stokes in character. The breath has an odor exactly like that of aniline oil, but not at all like that of almonds." His face was then touched, when he at once aroused and asked where he was, the Cheyne-Stokes breathing disappeared, and the respirations increased to 42. He complained of great drowsiness, and of an intense dull, aching pain in the head, and a feeling of a heavy weight in the stomach. The blueness remained as before. He did not sleep well that night, owing to the headache, but was better next morning. On the following day he was much better, and able to go out; the cyanosis was slight; he still had some headache and anorexia. The urine was high-colored, turbid, specific gravity 1032, containing an excess of urea and a trace of bile, but no albumen, and no blood or globulin. He stated that he had been employed at the works for seven weeks, and that on March 16 he began to make picric. His duty was to heat and whizz a mixture consisting of nitric acid, carbolic acid, vitriol, and nitro-benzole, and the fumes from this mixture he constantly inhaled. On the 17th he felt sick, and had pains in the stomach and head, and the next day he was worse, and could hardly walk home. On the following day he was much worse, and the doctor came to see him, and gave him a quart of new milk and two eggs, and sent him home, telling him not to go to sleep. He did go to sleep in the afternoon, and in the evening, as already stated, was brought to the hospital.—*London Medical Recorder*, May 20, 1889.

A MODIFICATION OF DR. JEFFRIES'S BREAD FOR DIABETICS.

Dr. John A. Jeffries published in the *Boston Medical and Surgical Journal* for January 24 the following formula for a new diabetic bread:

"One cup of graham flour; one cup of best bran, previously scalded with one cup of boiling water; two eggs; German yeast or baking-powder; salt to taste; one cup of milk or water. To be mixed with a spoon.

Such a bread contains 17.72 per cent. of starch, the equivalent of 19.68 (?) per cent. of sugar."

In the *University Medical Magazine* for June, 1889, DR. JAMES TYSON states that he had recently under his care a case of diabetes where the sugar was eliminated by a selected diabetic diet, from which bread was excluded, and it occurred to him to make a trial of this modified bread. Accordingly some was made after this formula. At the end of one week the urine was found to contain between one-half per cent. and one per cent. of sugar. It then occurred to him to modify the formula by substituting the gluten flour of the Health Food Company of New York for the graham flour, mixing it with bran as before. At the end of another week the urine was found to contain about one-quarter of one per cent. of sugar. The patient was then taken off of all bread, and at the end of another week sugar had disappeared from the urine, showing that this combination, as was to be expected, was better than the former. The bread thus modified was quite palatable.

ARTERIAL MURMUR.

DR. SIDNEY PHILLIPS terminates a long article, published in the *Lancet* for May 18 and May 25, with the following conclusions:

Conclusions.—1. A murmur is sometimes audible in the subclavian artery immediately below the clavicle, which is not the result of organic disease or of pressure upon the artery, and is most common in anæmia and other conditions where there is defective adaptation of the arterial wall to the blood-current. 2. The various circumstances influencing the production and rhythm of the subclavian murmur are dependent on its anatomical position and the respiratory movements. 3. Murmurs may be often heard in anæmia in the large branches of the aorta within the chest. 4. The respiratory movements have a marked influence on the characters of anæmic murmurs in arteries arising within the thorax. 5. The murmurs heard in the subclavian and pulmonary regions in some cases of phthisis, inasmuch as they may exist without phthisis, must not be regarded as diagnostic of that disease, and are not produced by pressure of consolidated lung in most cases where they coexist with phthisis. 6. Murmurs may be originated in intra-thoracic arteries from traction upon them by the displacement of the heart in pleuritic effusion.

THE PREVENTION OF THE SPREAD OF CONSUMPTION.

The Health Department of New York City have formulated the following rules, based upon the conclusions arrived at by a committee of physicians and pathologists of that city:

Pulmonary tuberculosis (consumption) is directly communicated from one person to another. The germ of the disease exists in the expectoration of persons afflicted with it. The following extract from the report of the pathologists of the Health Department explains the means by which the disease may be transmitted:

Tuberculosis is commonly produced in the lungs (which are the organs most frequently affected) by breathing air in which living germs are suspended as dust. The material which is coughed up, sometimes in large quantities, by persons suffering from consumption contains these germs often in enormous numbers.

This material when expectorated frequently lodges in places where it dries, as on the street, floors, carpets, handkerchiefs, etc. After drying in one way or another, it is very apt to become pulverized and float in the air as dust.

By observing the following rules the danger of catching the disease will be reduced to a minimum:

1. Do not permit persons suspected to have consumption to spit on the floor or on clothes unless the latter be immediately burned. The spittle of persons suspected to have consumption should be caught in earthen or glass dishes containing the following solution: corrosive sublimate, 1 part; water, 1000 parts.

2. Do not sleep in a room occupied by a person suspected of having consumption. The living rooms of a consumptive patient should have as little furniture as practicable. Hangings should be especially avoided. The use of carpets, rugs, etc., ought always to be avoided.

3. Do not fail to wash thoroughly the eating utensils of a person suspected of having consumption, as soon after eating as possible, using boiling water for the purpose.

4. Do not mingle the unwashed clothing of consumptive patients with similar clothing of other persons.

5. Do not fail to catch the bowel discharges of consumptive patients with diarrhœa in a vessel containing corrosive sublimate 1 part, water 1000 parts.

6. Do not fail to consult the family physician regarding the social relations of persons suffering from suspected consumption.

7. Do not permit mothers suspected of having consumption to nurse their offspring.

8. Household pets (animals or birds) are quite susceptible to tuberculosis; therefore do not expose them to persons afflicted with consumption; also, do not keep, but destroy at once, all household pets suspected of having consumption, otherwise they may give it to human beings.

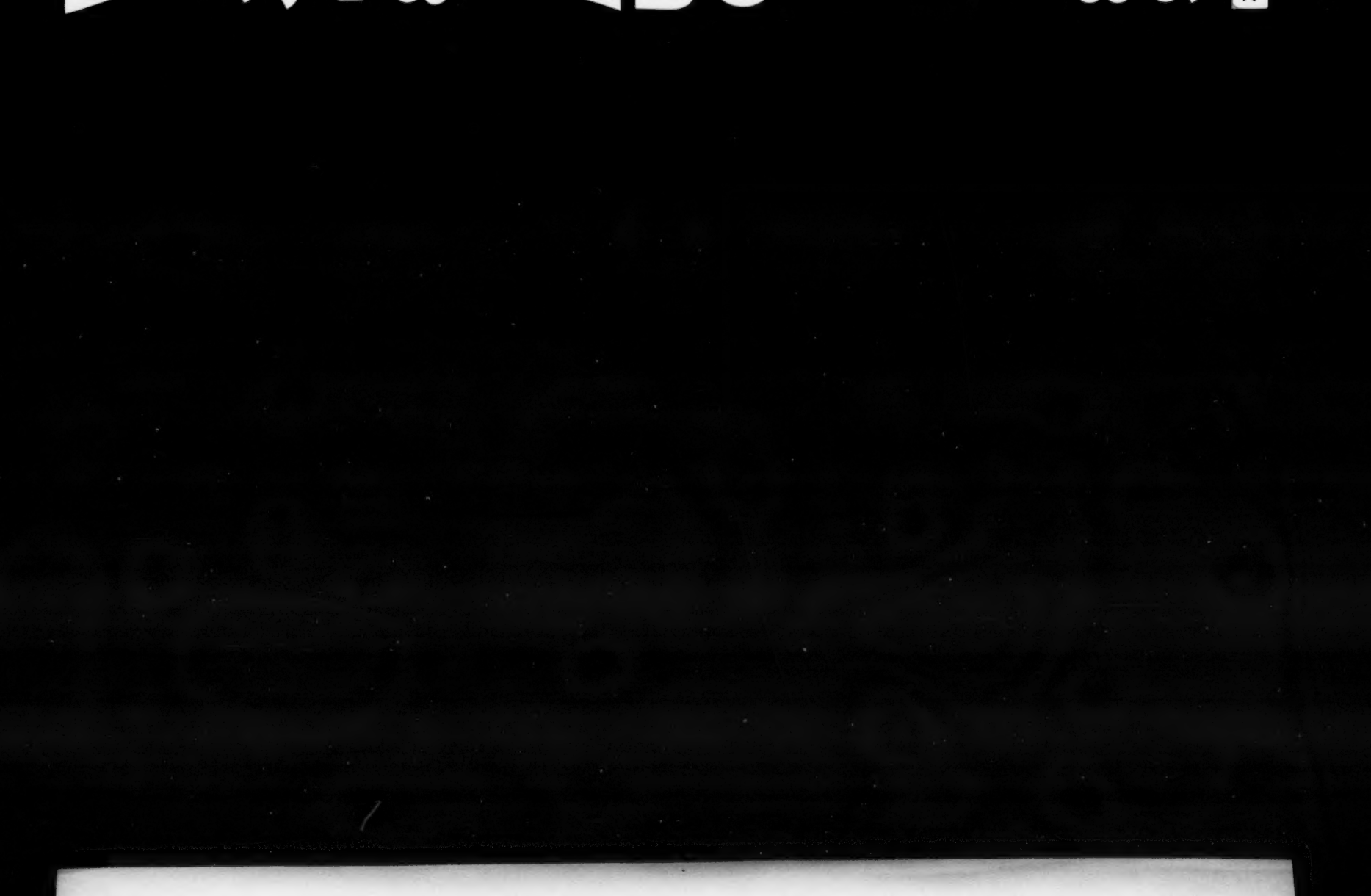
9. Do not fail to cleanse thoroughly the floors, walls, and ceilings of the living and sleeping-rooms of persons suffering from consumption at least once in two weeks.

THE TONSILS IN PHTHISIS.

Dr. Dmokhovski publishes in a Polish medical journal—the *Gazeta Lekarski*—some important observations on the condition of the tonsils and the follicular glands at the base of the tongue in phthisical subjects. Strassmann had previously made some observations on the tonsils, and had found them affected in thirteen cases out of twenty-one which he examined. Dr. Dmokhovski was able to show some affection of the tonsils in every one of the fifteen cases examined post mortem, the lymphatic glands at the base of the tongue being also affected in nine of these cases. The lungs were in every instance decidedly affected, and in five there was slight tuberculous ulceration of the larynx. The ages of the subjects varied from 18 to 56. Presumably the tonsils were infected from the mouth, the bacillary infection at first affecting the epithelial layers and subsequently the deeper tissues,—viz., the lymphatic sinuses and the follicles themselves. The tuberculous character of these changes was made manifest either by the existence of large disseminated collections of Koch's bacilli, or by the concomitant signs of general inflammation of the connective tissue, or by the occurrence of fully developed tubercles. These showed themselves first of all in the connective tissue between the follicles along the lymphatic vessels leading to neighboring cervical lymphatic glands. Ulcerations of the tonsils were observed in the crypts, but never on the free surface of the glands; sometimes cavities were found in the tonsils. In the living subject no marked affection could ever be detected by the naked eye in the tonsils. The absence of disposition to external ulceration is explained by the supposition that the deeper tissues form a far more suitable soil for the development of the tubercle-bacilli than the superficial tissues,—that is, the mucous membrane covering the surface of the gland.—*Lancet*, June 22, 1889.

VARICOSE VEINS OF THE LOWER EXTREMITIES.

Mr. William H. Bennett terminates a lecture, delivered before St. George's Hospital Medical School, with the following conclusions (*Lancet*, June 1, 1889): 1. That, discounting the influence of pregnancy, the tendency to the development of varicose veins in the lower limbs is greater in men than in women. 2. That the disease for the most part arises from congenital and often hereditary defect or other abnormity in the venous apparatus, there being no evidence to show that a vein originally perfect (excepting perhaps the long saphena) ever becomes varicose before middle age, in the absence of such obvious causes as those previously referred to. 3. That two distinct classes of the disease exist,—one beginning in the deep veins, and subsequently involving the superficial; the other affecting the superficial veins only, usually the long saphena and its radicles, and being confined almost entirely to tall subjects. 4. That the large mass of varicose veins in the lower part of the thigh, often associated with a globular varix at the saphenous opening, may, in many cases, although apparently connected with the long saphena, be independent of it, being fed for the most part by veins coming through the fascia from the deeper parts of the limb,—a point worthy of consideration in the treatment of these cases.

PILOCARPINE IN THE CONVULSIVE ATTACKS OF HYSTERO-EPILEPSY AND MANIACAL EXCITEMENT.

In the *Journal of Nervous and Mental Diseases*, No. 4, 1889, Dr. Samuel B. Lyon reports the case of a married woman, aged 30, in whom the convulsive seizure had the characteristics of hystero-epileptic attacks, who was relieved by a hypodermic injection of ⅛ grain of muriate of pilocarpine over the left ovary. Her temperature, which had been 103⅘°, fell to 101½°. The convulsive movement ceased, consciousness gradually returned, and a quiet sleep followed. In this case inhalations of amyl nitrite and ether had only temporarily quieted the spasmodic condition.